THE NEWSPAPER OF INFORMATION SYSTEMS MANAGEMENT
July 20, 1992 · Vol. XXVI · No. 29 · 116 Pages · $2/Copy · $48/Year

COMPUTERWORLD

MIDCOURSE CORRECTION

OSF struggles to right listing ship

BY MARYFRAN JOHNSON
CW STAFF

First of a two-part series on the Open Software Foundation.

CAMBRIDGE, Mass. — The beginning of the end of the so-called "Unix wars" can be traced back to a breezy spring evening last year, when the presidents of the Open Software Foundation and Unix System Laboratories, Inc. met and made peace at Buoniconti's Italian restaurant.

The results of that diplomatic dinner, held between USL's Roel Pieper and the OSF's David Tory, are emerging now with USL's recent public support for key OSF software technologies in system and network management.

The OSF's Tory *(L) and USL's Pieper pledge their support publicly*

Users are especially relieved to hear both companies now declaring that their Unix variants — Unix System V, Release 4 and OSF/1 — will be interoperable next year via common interfaces and specifications.

"Users care about being able to buy products that interoperate and heterogeneous platforms that work well together," said Warren Hoffman, a principal consultant at Du Pont Co. in Wilmington, Del. Hoffman is also a member of the OSF's end-user committee.

"If we don't want to be bogged down with

Continued on page 20

Olsen resigns on eve of big losses, layoffs

Successor must navigate Alpha migration

BY MELINDA-CAROL BALLOU
and KIM S. NASH
CW STAFF

MAYNARD, Mass. — Digital Equipment Corp.'a long overdue restructuring gained momentum last week with the surprise announcement of founder Kenneth Olsen's imminent retirement.

Underscoring the need for big changes at the beleaguered minicomputer maker is the expected confirmation this week of large losses that are expected to be followed by massive layoffs.

Analysts said DEC's painful restructuring could impact users in two key areas: Some unprofitable product lines are expected to be phased out, and DEC will finally tighten its marketing focus.

While earlier estimates for DEC's fiscal fourth-quarter operating loss hovered at about $250 million, analysts last week revised their projections to about $150 million following statements by DEC executives regarding a last-minute uptick in orders. DEC is expected to take a restructuring charge of approximately $1 billion to cover costs associated with laying off more than 10,000 employees, or about 10% of its work force, analysts said.

Alan Levenson

User: *Olsen will leave 'verybig hole'*

Olsen's handpicked successor is Robert Palmer, current vice president of manufacturing and logistics, who has overseen the production of Alpha. DEC's next-generation RISC chip. Palmer's mandate will be to en-

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IBM downsizes AD/Cycle focus

BY JOHANNA AMBROSIO
CW STAFF

SAN JOSE, Calif. — Within the next 30 days, IBM is expected to disclose a major shift in focus for its AD/Cycle computer-aided software engineering initiative that will once and for all extend the framework beyond the mainframe to Unix and OS/2-based local-area networks, users and other sources said last week.

IBM executives were not available for comment, but a spokesman did confirm that IBM is "actively looking at extensions to AD/Cycle" to address the "need for workgroup development support."

Some observers lauded the pending announcement as IBM's response to customers wanting to develop software on OS/2 and AIX workstations. But others viewed it as IBM's acknowledgment of defeat with the much-troubled, mainframe-centric Repository Manager/MVS.

"That's a hard swerve away from the original concept. The idea was to have a central storage place and directory to better develop and reuse code for the entire enterprise. If you map that onto a LAN, it's not the same concept," said Howard Fosdick, an independent consultant and former president of the

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Code recycling

Users rate Smalltalk compilers above C++ products for creating reusable code

See Buyers' Scorecard, page 43

Product	Reusability of code
Digitalk's Smalltalk/V	8.5
ParcPlace Systems' Objectworks/Smalltalk	8.3
Microsoft's C/C++	7.9
Borland's C++	7.3

Ratings indicate user satisfaction
Maximum score: 10

Users shun big iron for networked PCs

Micros could save Knight-Ridder $1.7 million

BY JOANIE M. WEXLER
CW STAFF

LEAWOOD, Kan. — After running its services on Tandem Computers, Inc. systems for a dozen years, worldwide information services firm Knight-Ridder Financial, Inc. is seriously considering a migration off the fault-tolerant machines onto high-end personal computers.

Vice President of Systems and Development Richard Boulderstone had actually scheduled the gutsy platform shift to begin late this month — until Tandem experts arrived last week to salvage the account by fine-tuning the system'a performance. Their success has caused Knight-Ridder to reevaluate its plans, though the PC shift is still likely, he said.

Boulderstone had cited higher, more consistent throughput speeds as one impetus behind his plans. An expected savings of $1.7 million in processing power

Continued on page 14

Bendix Notes push tied to quality initiative

BY CAROL HILDEBRAND
CW STAFF

SOUTH BEND, Ind. — Bendix Automotive Systems Group last week kicked off a multimillion-dollar, multiyear downsizing process that could eventually move the company'a entire automotive sector off an IBM Systems Network Architecture/Profs environment and onto a multiple-LAN platform that would be anchored by a 5,000-node license for Lotus Development Corp.'s Notes and CC:Mail.

Dennis Everett, group direc-

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HP CEO John Young to retire Oct. 31; Lew Platt, HP's minicomputer and workstation chief, tapped as successor. Page 6.

The love/hate relationship between Apple and Microsoft gets mushy. Page 4.

Are hackers turning on one another? Page 6.

Oracle to unveil revamped applications line. Page 10.

Product Spotlight — The new word processors are decidedly *not* 'everything in a box.' Page 77.

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Quotable

"*If Alpha fails, DEC is dead.*"

RIKKI KIRZNER
DATAQUEST

On its growing product line.
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The 5th Wave

"I JUST DON'T THINK THIS NEW SALES KID IS GONNA WORK OUT."

EXECUTIVE BRIEFING

■ **Surprise retirements announced last week** by longtime DEC President Ken Olsen and HP President John Young portend significant changes for this pair of major system vendors. DEC is beset by financial woes as it struggles through yet another reorganization, while the much stronger HP is striving to make inroads in corporate data center accounts. **Pages 1, 6.**

■ **With the Unix wars now over, the OSF is entering a critical new stage** in its four-year existence. Its six major sponsors are pondering changes this summer in how the $55 million nonprofit foundation goes about its business. End users, meanwhile, are anxious to see delivery of some long-promised systems and network management software for distributed computing. **Page 1.**

■ **IBM prepares to extend AD/Cycle and Repository Manager to workstations,** while the eventual fate of the mainframe product line remains unclear. **Page 1.**

■ **Microsoft and Apple** shelve their differences and outline plans for future joint technologies. **Page 4.**

■ **Knight-Ridder is considering bumping some of its service processing** off fault-tolerant Tandem systems to run on orders-of-magnitude cheaper PCs. **Page 1.**

■ **Stratus Computer and Sequoia Systems,** neighboring fault-tolerant system vendors, both roll out new hardware. **Page 12.**

■ **Offloading mainframe development to PCs** can increase developer productivity 30% to 40%, but is it right for everybody? **Page 83.**

■ **The latest Windows word processors are loaded with features,** but some people are finding they need both a Windows version for fancy layout tricks and a DOS version to pump out documents quickly. **Page 77.**

■ **A proprietary operating system wins out** at General Mills, which scraps a Unix project in favor of HP's MPE/IX. **Page 59.**

■ **The success of automated teller machines** has sparked interest in self-service technology by insurers and hotels. **Page 88.**

■ **PC support problems grow** as user applications become more complex. IS departments are scrambling to fill gaps. **Page 87.**

■ **Dell differentiates between its low-priced and deluxe PCs** by bundling service options ranging from compatibility guarantees to telephone support. **Page 35.**

■ **Who needs Windows?** A New York social service organization finds low-cost DOS environment serves its needs just fine. **Page 35.**

■ **Coffee and your morning computer?** It may happen, as newspapers begin to dabble in on-line delivery. **Page 30.**

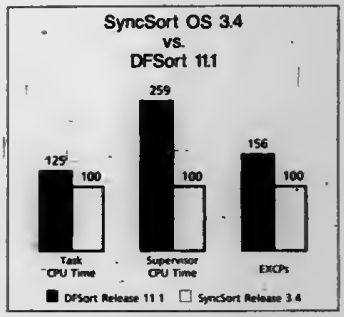
■ **A little LAN diversity isn't bad,** a report notes. Emerging distributed computing standards should overcome operating system incompatibilities. **Page 45.**

■ **A European CASE standard is winning U.S. backers** for its ability to integrate diverse proprietary tools. **Page 69.**

■ **Sterling Software gets client/server** religion. It's betting on the Zim application development system to break out of its mainframe mold. **Page 59.**

■ **On site this week:** Superservers bring order to a chaotic computing setup at a San Francisco-based law firm. **Page 45.** A Canadian credit union breathes easier as remote channel extenders cut backup times to nanoseconds. **Page 51.** A giant CASE project brings wrenching organizational change to an Ohio state agency, but IS staffers say it was worth the trouble. **Page 69.**

HERE'S WHERE WE LEAVE THE COMPETITION.



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Apple, Microsoft announce joint tech plans

Support, integration agreements highlight competitive cease-fire; product upgrades announced

BY JAMES DALY
CW STAFF

SAN JOSE, Calif. — The love/hate relationship between Microsoft Corp. and Apple Computer, Inc. continued unabated last week as the courtroom foes and desktop rivals shelved their differences long enough to outline future joint technologies plans.

In addition, Microsoft announced updates to its project management, mail and integrated application packages for Apple's Macintosh and revealed plans to develop software for the next-generation Macintosh computer, the PowerPC.

The pair's joint technology initiatives covered a number of different areas to enhance productivity for mutual customers. They will begin to arrive in the first half of 1993, according to both companies, and will include the following features:

- Apple will support Microsoft's Open Database Connectivity (ODBC) application programming interface (API) as a standard facility of the Macintosh Data Access Manager, thus allowing ODBC-compliant applications access to server databases through one set of API calls. ODBC is a call-level interface specification developed by the SQL Access Group, a consortium of more than 40 vendors.
- Both companies said they would work to integrate the functionality of ODBC and Apple's Data Access Language (DAL). Apple announced plans to build an ODBC/DAL client that will translate ODBC calls and information into DAL functions and provide ODBC applications access to DAL servers. It also intends to develop an ODBC/DAL client for Windows.
- Microsoft will support Apple's Open Collaboration Environment, which integrates a messaging function into the next major update of Microsoft's Word and Excel.
- Microsoft gave a sneak peek at a new FoxBase for the Macintosh that it hopes to deliver by year's end.

In the politics

Will the agreements have any significant effect on the day-to-day work lives of users? "I'm all for anything that will help interoperability, and this may do that in some small way, but I think the most important thing about this agreement is the politics," said Rick Marolt, information systems manager at Great Central Insurance Co. in Peoria, Ill.

The application updates mark a periodic refresh for Microsoft's Macintosh line. Works Version 3.0 is a major upgrade of the integrated productivity application that offers a word processor, database, spreadsheet, drawing and communications capabilities in one package. It is expected to be available in the third quarter for $249.

Project Version 3.0 is designed to organize, schedule, chart and summarize all aspects of a project and can be easily customized. It is scheduled to be available by early next month and sport a retail price of $695.

Microsoft also announced Version 3.1 of Mail for AppleTalk, which adds remote access and wide-area connectivity. It is slated to ship next month for $395.

Apple Chairman John Sculley said that while the two firms have sparred in other areas, Microsoft has always supported "the mother ship Macintosh" and that common business sense dictates that the two cooperate. Microsoft Chairman Bill Gates agreed: "You can't approach this business in an emotional way. In many ways we're Apple's best supporter."

The Apple/Microsoft relationship — which fluctuates widely between bitter competitive battles and supportive announcements — certainly ranks as one of the most chameleon-like relationships in the computer industry, observers said.

Although the firms have worked closely together for more than a decade, Apple is currently involved in a bitter 4-year-old copyright suit against Microsoft and Hewlett-Packard Co., which it has charged with illegally copying graphical elements of the Macintosh screen appearance into their Windows and NewWave interfaces, respectively.

Lotus results show Windows app struggles

BY ROSEMARY HAMILTON
CW STAFF

CAMBRIDGE, Mass. — In reporting revenue of $220 million for its second quarter last week, the official word from Lotus Development Corp. was that while the results "reflect significant progress," the company "currently faces challenges in spreadsheet market growth, pricing and worldwide economic trends."

Translation: There is still a heck of a struggle between Lotus and Microsoft Corp. to win over users to their Windows applications, according to several industry observers.

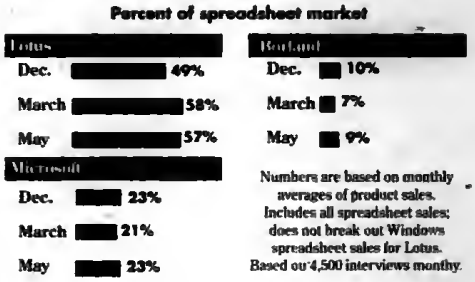
Lotus reported net income of $14.9 million for the quarter ending in June, up from $9.2 million last year. The results are in line with Lotus' announcement last month that revenue would be about $10 million less than expected.

Lotus and Microsoft have downplayed recent rumors that their Windows applications suites are selling at bargain-basement prices. Even so, users and analysts said they are aware of price cuts on these packages, which include a spreadsheet, a word processing and graphics application and a single mail module. This amounts to more than $1,500 worth of software — but Microsoft lists Office at $750, and Lotus prices Smartsuite at $795.

"Over the last several months, we've seen indications of very low prices for suites," said Jude Gartland, a senior vice president at Shearson Lehman Brothers, Inc. in New York.

Holding on

Although Lotus has had trouble penetrating the Windows spreadsheet segment, its overall market share has grown in 1992



Numbers are based on monthly averages of product sales. Includes all spreadsheet sales; does not break out Windows spreadsheet sales for Lotus. Based on 4,500 interviews monthly.

Source: Computer Intelligence

Tim McCollum, a Wall Street analyst and senior vice president at Dean Witter Reynolds, said his company recently made some Microsoft Office purchases. While he did not know the exact price, he said he believed the final cost was less than $300 a suite.

Officials at both companies said the real issue is not so much the price war but a more basic shift in users' buying patterns. Many users are looking to suites to provide a set of applications from a single source, they said. The price is hard to beat, and support is simplified.

For the vendors, it means less revenue per application in the short term. But it also indicates a single customer uses four of their applications, which could mean a greater revenue stream per customer over time.

Advanced financial tools home in on spreadsheets

BY ROSEMARY HAMILTON
CW STAFF

A new wave in personal computer financial tools is rolling in, bringing with it a promise of relief to users who are tired of the hassles that come with managing complex spreadsheets.

"The spreadsheet has been king, and there haven't been a whole lot of changes," said Karl Dahlin, a senior systems analyst at Raynet Corp., a supplier of fiber-optic systems. "We'd developed them to a level of complexity where maintenance became impossible."

Lotus Development Corp. and Objective Software, a Palo Alto, Calif., start-up, each plan to ship advanced financial analysis tools soon.

Frank Ingari, a Lotus vice president, said Improv for Microsoft Corp.'s Windows will ship to beta-test customers "within a couple months" and is on target for a debut late this year. Objective will officially launch Spreadbase for the Apple Computer, Inc. Macintosh next week and plans to preview a Windows version at Comdex/Fall '92.

"It's about time somebody did this," said Jeffrey van Skyhawk, manager of information technology assessment at Bose Corp. in Framingham, Mass., who beta-tested Spreadbase.

Computer Associates International, Inc. has been selling CA-Compete, a Windows-based tool that integrates spreadsheet and database technology, since early last year. And officials from Microsoft and Borland International, Inc. said they are also tackling this issue but will do so by improving their current spreadsheets rather than by delivering new products.

For example, Borland's Quattro Pro for Windows, which still does not have an official ship date, will include a "core database engine," said Lee Phillips, director of product management at the company.

"We don't see that technology like Improv is the solution for a broad class of [spreadsheet] problems," Phillips said. "Borland's whole take on this thing is to look at whole issues that are [about] data organization and data retrieval. They are probably better addressed with database technology, not spreadsheet technology."

Microsoft said it, too, will add to its spreadsheet, although it did not spell out what functions will be rolled into Excel.

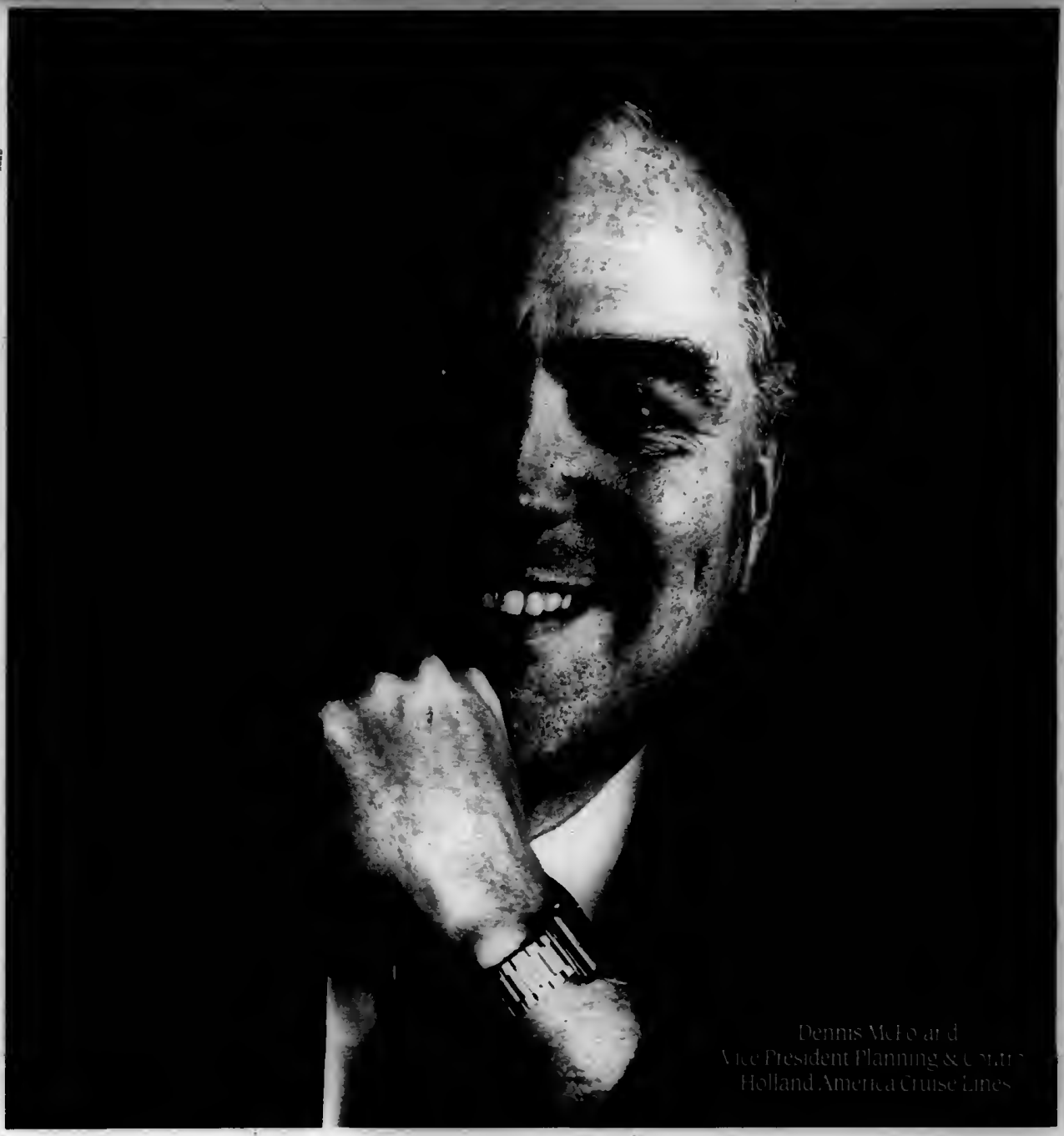
"Every company uses spreadsheets, and probably no company is totally satisfied with how they do it," said Lewis Levin, general manager at the Excel business unit. "Maybe too much of their work still has to be done by hand, and they wish their spreadsheet would do more of that. We intend to make that much easier."

However, at least one information systems executive was impressed with Improv, which Ingari described as more spreadsheet than database technology. "I've looked at Improv, and it has a couple strengths," said Jude Gartland, a senior vice president at Shearson Lehman Brothers, Inc. in New York.

Currently, there are many products available to improve a user's ability to work with financial data on the desktop, from executive information systems to data access tools that help load spreadsheets with data from outside sources.

But these latest efforts are an attempt to bump spreadsheets up to a new level.

"We are talking about business analysts who have horribly complicated spreadsheets or are using decision support tools that required a lot of MIS involvement and so that limited them," said Bernd Harzog, an analyst at Gartner Group, Inc. in Stamford, Conn.



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NEWS SHORTS

Perot back in the computing saddle

Ross Perot will return to Perot Systems Corp. after ending his unofficial bid for the presidency, a spokesman said. Perot will not displace Morton Meyerson, who left Dell Computer Corp. in May to become chairman and chief executive officer so that Perot could organize his campaign [CW, June 1]. "We expect [he'll do] strategic work, helping us to design major deals . . . [and] develop our company," said DeSoto Jordan, a founder of Perot Systems.

IBM's quarterly revenue jumps 10%

Continued cost-cutting and a jump of more than 40% in service revenue contributed to a 10% jump in IBM's fiscal second-quarter sales. IBM reported $1.2 billion in second-quarter profits on revenue of $16.2 billion. This time last year the company posted a profit of $126 million on sales of $14.7 billion. Chairman John Akers said that software growth is also helping IBM make "steady progress in reshaping" itself.

Apple's quarterly results shine

Sales of Apple Computer, Inc.'s popular PowerBook portable made a sizable dent in the firm's coffers as the Cupertino, Calif.-based company reported healthy third-quarter earnings last week. Revenue for the third fiscal quarter, which ended June 26, was $1.74 billion, a 13.8% increase over the $1.529 billion reported in the third quarter of the previous year. Net income was $132 million, compared to a net loss of $53 million in the same period last year that reflected a onetime $224 million restructuring charge.

IBM to boost PVS systems

IBM this week will extend the performance of its Power Visualization System (PVS) with a boost in processing power, memory and functionality, according to sources close to IBM. The top-of-the-line PVS Model 4 Server will include 32 Intel Corp. I860XP processors in parallel and scales up to 2.5G bytes of system memory.

Unisys network processor to debut

Next week, Unisys Corp. is expected to introduce Communications Access Processing, a network processor designed to promote interoperability between multivendor computer platforms and IBM's Systems Network Architecture (SNA) mainframe environment. It will handle front-end processors, remote concentrators, terminal concentrators, bridges and routers. It provides IBM 3270 terminal access to applications running under Unix and routes information from local-area networks over an SNA wide-area network.

Bull executive found murdered

The dismembered body of murder victim Thomas Mulcahy, director of international account sales at Billerica, Mass.-based Bull HN Information Systems, Inc., was discovered in New Jersey last week by a state-employed maintenance crew. Neither police nor Mulcahy's family have stated possible explanations for the mysterious death of the 22-year Bull veteran.

Short takes

Emulex Corp. will not sell its Digital Equipment Corp. storage line to **System Industries, Inc.** after "exhaustive examination" of a buyout proposal announced last month. . . . **Intel**'s supercomputer division and **Advanced Visual Systems, Inc.** (AVS) will make AVS' visualization software available on Intel supercomputers, the companies said last week. . . . **Dataquest, Inc.** is projecting that Japanese semiconductor makers will reduce capital spending on plant and equipment by 29% in fiscal 1992. . . . **Cypress Semiconductor Corp.** said it has beaten **Texas Instruments, Inc.** in a patent infringement case that resulted in a TI patent being invalidated. TI sued Cypress over circuitry used in Cypress' programmable logic devices. . . . **WordStar International, Inc.** said it will acquire **Zsoft Corp.**, a maker of graphics and image editing software.

More news shorts on page 16

Platt to replace Young as HP CEO

The move could boost vendor's penetration of the corporate data center

BY MARK HALPER
CW STAFF

PALO ALTO, Calif. — Hewlett-Packard Co., which is waging an all-out effort to raise its profile as a vendor for the corporate data center, last week named its minicomputer and workstation chief, Lew Platt, as its next chief executive officer.

Platt will take over Nov. 1 for John Young, who is retiring after 14 years. During Young's reign, HP was transformed from a company known mainly for test equipment and calculators to one that now vies with IBM and Digital Equipment Corp. for information systems mind share.

Chief Operating Officer Dean Morton, who has shared duties with Young since 1990, when the company created a chief executive office, is also retiring. Young and Morton, both 60, described their pending early retirements as voluntary.

By naming Platt, 51, the HP board ended months of speculation over whether Platt or 55-year-old Richard Hackborn, HP's printer, peripherals and personal computer chief, would succeed Young. Together, Platt's computer systems organization and Hackborn's computer products organization account for the bulk of the firm's growth.

Young *brought HP to the big league to compete with DEC and IBM*

For Hackborn, growth has come largely through increasing sales of HP's highly successful laser and inkjet printers. Platt's success has come through overseeing HP's move into Unix in both its workstation and its minicomputer business.

Users and analysts noted last week that a change was in order as the company steps up its effort to replace IBM iron in corporate data centers with both its Unix and proprietary MPE/IX minicomputers.

Young "was able to run with it for a distance. But now, with the move to Unix and other pressures they're feeling, there needs to be someone with a different outlook and someone more focused on systems," said Roger Lindquist, manager of information services at Dryers Grand Ice Cream, Inc. in Oakland, Calif.

One of Platt's largest challenges will be to enhance the firm's professional services and systems integration capabilities, Young said.

Platt agreed: "We have the hardware. Now we have to demonstrate we can help users migrate platforms and that we can do the consulting."

Frustrated hackers may have helped feds in MOD sting

BY JAMES DALY
CW STAFF

NEW YORK — Are hackers beginning to police themselves? The five men recently charged with cracking into scores of complex computer systems during the last two years may have been fingered by other hackers who had grown weary of the group's penchant for destruction and vindictiveness, members of the hacker community said.

The arrest of the defendants, whom federal law enforcement officials claimed were members of a confederation variously called the "Masters of Deception" and the "Masters of Disaster" (MOD), was cause for celebration in some quarters where the group is known as a spiteful fringe element.

"Some of these guys were a big pain," said one source who requested anonymity for fear that unindicted MOD members would plot revenge. "They used their skills to harass others, which is not what hacking is all about. MOD came with a 'you will respect us' attitude, and no one liked it."

Said another: "In the past few months, there has been a lot of muttering on the [bulletin] boards about these guys."

In one episode, MOD members reportedly arranged for the modem of a computer at the University of Louisville in Kentucky to continually dial the home number of a hacker bulletin board member who refused to grant them greater access privileges. A similar threat was heard in Maryland.

In the indictment, the defendants are accused of carrying on a conversation in early November 1991 in which they sought instructions on how to add and remove credit delinquency reports "to destroy people's lives . . . or make them look like a saint." Unlike many other hacker organizations, the members of MOD agreed to share important computer information only among themselves and not with other hackers.

Officials mum

Who exactly helped the FBI, Secret Service and U.S. Attorney General's Office prepare a case against the group is still anyone's guess. Assistant U.S. Attorney Stephen Fishbein is not saying. He confirmed that the investigation into the MOD began in 1990, but he would not elaborate on how or why it was launched or who participated. FBI and Secret Service officials were equally mute.

Some observers said that if the charges are true, the men were not true "hackers" at all.

"Hacking is something done in the spirit of creative playfulness, and people who break into computer security systems aren't hackers — they're criminals," said Richard Stahlman, president of the Cambridge, Mass.-based Free Software Foundation, a public charity that develops free software. The foundation had several files on one computer deleted by a hacker who some claimed belonged to the MOD.

The MOD hackers are charged with breaking into computer systems at several regional telephone companies, Fortune 500 firms including Martin Marietta Corp., universities and credit-reporting concerns such as TRW, Inc., which reportedly had 176 consumer credit reports stolen and sold to private investigators. The 11-count indictment accuses the defendants of computer fraud, computer tampering, wire fraud, illegal wiretapping and conspiracy.

But some hackers said the charges are like trying to killing ants with a sledgehammer. "These guys may have acted idiotically, but this was a stupid way to get back at them," said Emmanuel Goldstein, editor of *2600*, a quarterly magazine for the hacker community based in Middle Island, N.Y.

Longtime hackers said the MOD wanted to move into the vacuum left when the Legion of Doom began to disintegrate in late 1989 and early 1990 after a series of arrests in Atlanta and Texas. Federal law enforcement officials have described the Legion of Doom as a group of about 15 computer enthusiasts whose members rerouted calls, stole and altered data and disrupted telephone services.

LOOK WHO'S COOPERATING ON A COOPERATIVE-SERVER DATABASE

"Oracle's always been the leader in building database technology. One of the great things about Oracle's approach is that they're hiding the differences between all the machines out on the network running on various platforms."

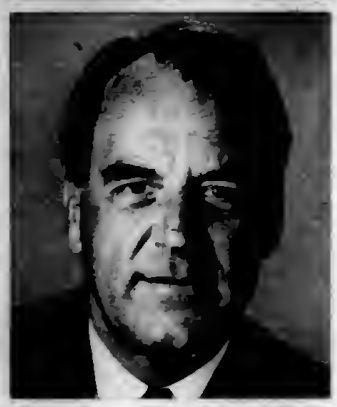
Bill Gates
Chairman and CEO
Microsoft Corporation

"ORACLE7's breakthrough in hiding technological complexity is analogous to the ease-of-use breakthroughs accomplished by the introduction of the Mac in 1984."

John Sculley
Chairman and CEO
Apple Computer, Inc.

"The fundamental problem with early client-server database management systems is that applications cannot access data on more than one server without a lot of extra programming. This programmatic approach to accessing data on multiple servers is in stark contrast to the totally automatic approach provided by ORACLE7."

Larry Ellison
President and CEO
Oracle Corporation



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President, CEO and Chairman
Sun Microsystems, Inc.

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Sun upgrade offer targets Apollo users

BY MARYFRAN JOHNSON
CW STAFF

Let the upgrade games begin.

Sun Microsystems, Inc. began pitching a hardware trade-in campaign to Hewlett-Packard Co.'s Apollo workstation users last week. Sun, based in Mountain View, Calif., is offering discounts from $3,300 to $6,800 off its SPARCstation IPX and SPARCstation 2 machines to users ready to jettison their Apollo boxes.

Sun is snapping at the shiny lure of the more than 100,000 Apollo machines installed worldwide. Purchased by HP in 1989, Apollo Computer, Inc.'s proprietary Domain operating system recently entered what users are calling "hospice care" — meaning that no more major releases are coming, but HP support is promised until the year 2000.

This means war

Sun claimed that its program, which runs through Dec. 31, offers 50% higher trade-in values than HP's. Palo Alto, Calif.-based HP said it would "stay on top of the price war," claiming to have already spent millions on programs to migrate the Apollo base. HP recently launched a "dealmaker program" for Apollo users that discounts fully configured HP Series 700 workstations by 40%.

Bigger hurdles than pricing stand in Sun's way, however. Many Domain users dislike Unix in general and Sun specifically.

"Sun and Apollo were archenemies," said Doug Eltoft, chairman of the Interworks HP/Apollo workstation user group and director of the Iowa Computer-Aided Engineering Network at the University of Iowa. "It's a religious thing. Computer people aren't necessarily rational."

Eltoft manages a network with 200 Apollo/Domain workstations and another 100 Unix-based HP/Apollo 9000 Series 700 workstations. "Domain was an operating system designed around networking, while Unix was patched together to understand networking afterwards," he said. "Anybody on Domain who is hoping to get functionality back is waiting for the Open Software Foundation's DCE."

The integrated set of system management software in the Distributed Computing Environment (DCE) includes Apollo's Network Computing System distributed file structure, Eltoft noted. HP plans to layer DCE software in the HP/UX 9.0 Unix operating system set for release later this year.

Another deciding factor for some users may be that SPARCstations cannot be plugged into Apollo Token Ring networks, HP officials said. They can offer Apollo users an add-in networking card to plug Series 700 workstations into those networks. HP also produces a Domain-lookalike user interface on the Series 700 that Sun does not.

Notebook market heats up as 486s hit the beach

BY MICHAEL FITZGERALD
CW STAFF

The fabled summer slump does not apply to the notebook market. Four vendors released new products last week, including some that use Intel Corp.'s 1486 or compatible processors.

The Intel 486 products came from Advanced Logic Research, Inc., while Grid Systems Corp. released a notebook based on Cyrix Corp.'s 386/486SX hybrid, the CX486SLC.

Zeos International Ltd. released a 386SL-based notebook with an innovative screen design, and Librex Computer Systems, Inc. released a notebook that uses Advanced Micro Devices, Inc.'s AM386SXL.

Most market research firms have said they do not expect the 486 to become the dominant notebook processor in the foreseeable future, and few vendors offer it. However, in the wake of significant price cuts from Intel on its 486DX and 486SX processors, some said they are rethinking their 486 sales projections.

"The 486 will look stronger this year than we initially thought because of the opportunity that some vendors are taking to bring price points down to competitive levels with the 386," said Richard Zwetchkenbaum, senior personal computer analyst at International Data Corp. in Framingham, Mass.

For example, executives at Toshiba America Information Systems, Inc. said recently that they expect their 486 notebooks to supplant their 386 products as standard by year's end, in light of declines in chip pricing. At the same time, sources said Toshiba plans to release a $1,495 386SX notebook in September.

While 486 power is not likely to interest all users, several said they were looking at 486 notebooks.

"We would like more 486 notebooks for our work," James Slattery, supervisor of the systems group at Dow Jones, Inc., said at a recent trade show.

"We would like to switch to the 486," said Richard E. Nelson Jr., vice president of agency systems at New York Life Insurance Co. Nelson said his company might wait for 486 notebooks with 200M- or 240M-byte hard drives, which he said he expects in the next few months, before approving them for purchase.

He does not expect to pay a significant premium for a 486 notebook. "Incremental prices are getting closer and closer all the time," he said.

Slattery said Dow Jones will wait to see if prices will fall further.

The new notebooks continue this trend. The Grid 1755/486SLC costs $2,795, which is what many 386SX notebooks listed for at the beginning of this year. ALR's Intel 486SX and DX-based Ranger MC models offer a passive-matrix color screen with 60M-, 80M- or 120M-byte hard drives and have a lower base price than 386SL-based active-matrix color notebooks from other vendors. The Zeos and Librex 386-based notebooks each start at less than $1,900.

Zeos may have scored a first, by building a screen that can tilt or swivel to a variety of angles. The Zeos Freestyle/SL is also the first notebook the company has designed and built in-house.

While the 386SX and derivatives appear to have a solid future, analysts said lower prices on 486-based machines were the death knell for the 286 chip.

"The price differential is not that great now, and I don't see much of a future for the 286," said William Lempesis, president of Lempesis Research in Pleasanton, Calif.

Moving on up

A variety of vendors last week expanded their notebook product lines, some adding 486-based products

	Weight	Chip	Price	Available	Screen
Grid 1755/486SLC	6¼ pounds	Cyrix 486SLC	$2,795 (w/ 80M-byte drive)	Now	8½ in. VGA mono
ALR Ranger MC	7½ pounds	Intel 25-MHz 486SX 25-MHz 486DX	SX: $4,495 (w/ 60M-byte drive) DX: $5,495 (w/ 120M-byte drive)	Late this month	8½ in. VGA passive matrix color
Zeos Freestyle/SL	5.6 pounds	Intel 25-MHz 386SL	$1,895 (w/ 60M-byte drive)	Next month	Pivoting 9½ in. VGA mono
Librex VS386SXL	6.2 pounds	AMD 25-MHz 386SXL	$1,799 (w/ 60M-byte drive)	Now	8½ in. VGA mono

CW Chart: Stephanie Faucher

Internet group seeks SNMP, TCP/IP fixes

BY ELISABETH HORWITT
CW STAFF

CAMBRIDGE, Mass. — Some 700 members of the Internet Engineering Task Force (IETF) reached an informal consensus last week on how to quickly fix some serious limitations in Simple Network Management Protocol (SNMP) and Transmission Control Protocol/Internet Protocol (TCP/IP).

At stake is the two protocols' continuing status as successful de facto standards that can meet users' increasingly complex needs into the next century.

SNMP, which has remained virtually static for the past four years, is missing key functions such as the ability to interconnect different network management systems and collect network management data in bulk. TCP/IP, meanwhile, suffers from a limited address space that may cause Internet to run out of new addresses to assign within three years.

IETF members got their first look at Simple Management Protocol (SMP), which four prominent SNMP software developers are proposing as SNMP's successor [CW, June 29]. The protocol is said to remedy the SNMP problems described above and also support other transport protocols besides TCP/IP.

"It was clear there was a consensus" around SMP, said Chuck Davin, the IETF's area director of network management. A warm reception, coupled with the absence of rivals, makes it almost certain that SMP will become the new SNMP, Davin said. A stable draft of SMP should become available between November and March.

Things have been a little more stormy in the TCP/IP arena.

Internet, a TCP/IP-based international network for the research, government and academic communities, is doubling in size every year — which means that TCP/IP's 32-bit addressing scheme is likely to run out of addresses sometime within the next five years, according to IETF estimates.

Two weeks prior to the meeting, the Internet Advisory Board proposed that the community forego further debate on various TCP/IP addressing proposals and get right down to "aggressive development and deployment" of an architecture based on the OSI Connectionless Network Protocol [CW, July 13].

The board's proposal generated a storm of protests that users needed more time to choose the right scheme.

OSI-based routing for TCP/IP could actually make life easier for federal agencies, which are mandated by the government to support OSI on their networks, said Steve Wolff, director of networking at the National Science Foundation. "We urge the community to find some resolution of the addressing problem as rapidly as possible."

Bowing to user pressure, The Internet Advisory Board effectively reversed its position at the start of last week's meeting. Its new recommendation was for the community to go on evaluating various addressing scheme submissions with the hope of making a choice by the next IETF meeting in November.

High standards

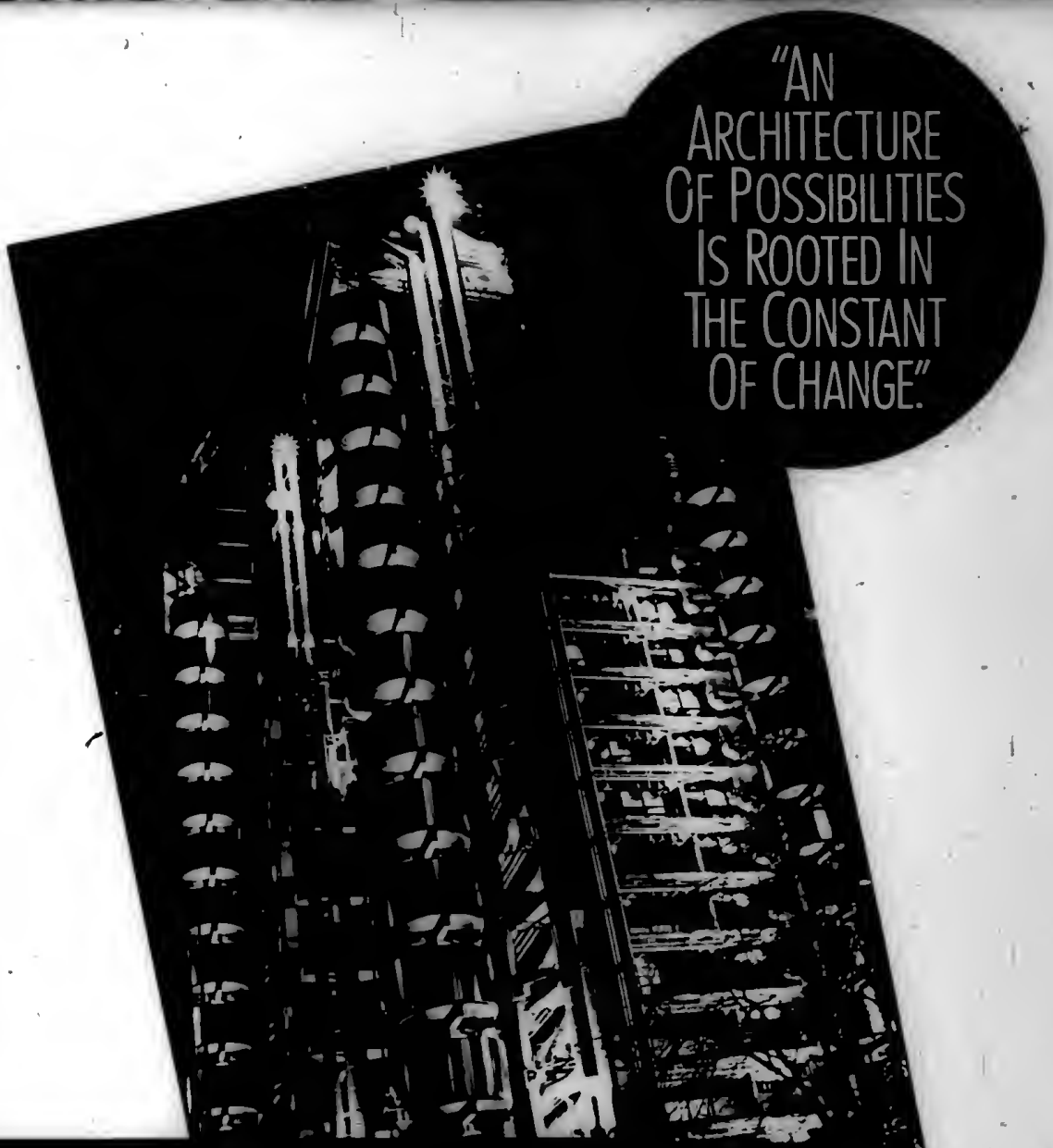
TCP/IP is still the most dominant non-IBM networking standard

"What network protocols are being used on your company's network?"
(Multiple responses allowed)

Percent of sites
Total: 400
(60 from government sector)

IBM SDLC	61%
TCP/IP	52%
Async	46%
Novell IPX	38%
DECnet	35%
IBM LU6.2	34%
Bisync	31%
OSI	13%
Other	18%

Source: Business Research Group, Inc.



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CLIENT/SERVER ARCHITECTURE FOR THE ON-LINE ENTERPRISE

Ask bypasses Ingres to build Unix-based program suite

BY JEAN S. BOZMAN
CW STAFF

MOUNTAIN VIEW, Calif. — The Ask Cos.' 1990 purchase of Ingres Corp. was supposed to marry Ingres' open systems database with Ask's financial and manufacturing software. The marriage took place, but the internal development process bogged down, sources said, leaving the happy couple with no offspring — yet.

But Ask needed software if it was to meet its promise to offer a line of Unix applications this year. So last week, the company unveiled a Unix-based applications suite called Manman/X developed without Ingres' aid or technology.

The suite was quietly purchased last summer from Baan International B.V. in the Netherlands for an undisclosed sum, sources said. Baan's Unix applications were not written for the Ingres database, however, and must be ported to Ingres, Ask confirmed.

"We bought the source code, and we can do with it what we like," said Peter West, Ask's vice president of marketing. Manman/X will ship in September, he said, although prices for the Manman/X applications have not yet been disclosed.

Manman/X will not be confined to Ingres. "It's reasonable for a customer to say, 'I want to run on Ingres, on [DEC's] Rdb or on Oracle,' " West said. "For an application vendor, it's advisable to run on more than one database.

"If you can go to market with a product that has some kind of track record, you can turn it into revenue much faster," West said, noting that Baan's product has been out for two or three years.

Industry analysts said $400 million Ask had to act now because Oracle Corp. and Dun & Bradstreet Software already field Unix applications with relational databases. Ask's 12-year-old Manman product runs on proprietary computers from Digital Equipment Corp. and Hewlett-Packard Co. "They could not wait," said Peter Kastner, a software analyst at the Aberdeen Group in Boston who lauded the move.

Advance, the product suite Ask is developing with Ingres that was viewed as a weapon against rival application vendors, was due to ship this year. For now, it remains on the drawing board, Ingres said.

Complex problems

Performance problems cropped up during a beta-test program earlier this year. "What we learned from the beta sites was that there were performance problems that were not related to Ingres or to relational database technology in general," West said. Advance "is incredibly complex code."

When Advance is ready, it will be able to exchange data with Manman/X, West said. He said the products would be complementary. "We have more options than before," he said. "We will be able to evolve our product line with Manman/X, rather than replacing it with Advance."

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Oracle to unveil new applications

REDWOOD CITY, Calif. — After a year inside a skunkworks development laboratory, Oracle Corp.'a revamped application software packages will be introduced today in San Francisco. The Oracle Applications Release 9.0 products have been rewritten to eliminate quality flaws associated with earlier releases, said George Koch, senior vice president at Oracle'a application division.

To prevent the kind of bugs associated with the first release of Oracle Financials two years ago, Oracle involved 40 user companies in its development process. Extensive beta testing at two dozen sites worldwide began in January and ended in May. The products shipped quietly last month.

Industry analysts who viewed some of the 23 application packages last week said users will be able to adjust the amount of work done by personal computer clients and database servers.

Options will allow users to turn on-screen features on and off as needed. Database report forms can be stored on servers, which saves PC memory and reduces network traffic.

Applications Release 9.0 will be provided as a free upgrade to the 800 companies that own earlier versions.

JEAN S. BOZMAN

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Page 98

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Stratus pads OLTP family with scalable systems

BY MELINDA-CAROL BALLOU
CW STAFF

MARLBORO, Mass. — Stratus Computer, Inc. extended its series of Intel Corp. I860XR reduced instruction set computing (RISC)-based on-line transaction processor (OLTP), fault-tolerant computers last week with scalable systems that span the performance gamut.

The next generation of XA/R systems includes single-, dual- and quad-processor systems (see chart), which offer more than double the performance of the company's complex instruction set computing (CISC)-based XA2000 series computers for a comparable price, Stratus officials said. The I860-based systems must sustain the company's user base until Stratus ships Hewlett-Packard Co.'s Precision Architecture-RISC-based systems sometime during 1994 or 1995, analysts noted.

High-end Models 300 through 330 are scalable from uniprocessor fault-tolerant systems to multiprocessor systems via a new twin-processor technology, Stratus officials said. Models 310, 320 and 330 offer two, four or six CPUs, respectively.

"The major technical innovation for us was the addition of multiprocessing for the RISC line," said Barbara Babcock, vice president of corporate marketing at Stratus. Applications are source code-compatible across the firm's product line, she said, which can run either the company's proprietary VOS operating system or FTX, Stratus' implementation of Unix System V, Release 4 from Unix System Laboratories, Inc.

The midrange systems — Models 25, 35 and 45 — will replace the company's previous XA/R Model 20, which began shipping last year, officials said.

Industry analysts were positive in their assessments of the systems, which target customers ranging from telecommunications and health care to the financial industries. "I think this line will carry [Stratus] until the second half of 1994," said Carolyn Osgood, a senior analyst at International Data Corp., a market research firm in Framingham, Mass.

Only 3% of Stratus' more than 5,000 installed systems have moved to the two XA/R RISC-based products that were available last year. This means that practically all of Stratus' user base is still running applications on the XA2000 series and may soon require the price/performance upgrades and scalability of the new line of XA/R. Many may not want to wait several years for platforms based on HP's PA-RISC architecture, according to industry analysts.

Tom Donaghey, manager of distribution systems at the Gillette North Atlantic Group in North Andover, Mass., a division of The Gillette Co., had an original CISC-based Stratus XA400 machine, which he upgraded to the entry-level XA/R Model 5 late last month.

"We were at first looking to expand to the XA2000 line, and then we decided to hold out until they came out with this line of RISC technology," he said.

"Response is a lot better, and the products offer increased capacity and compute power so we can expand applications," Donaghey noted.

Shiny and new

Stratus' new processor line is based on Intel's I860XR processor. A sampling:

One logical CPU*	VOS 11.1, FTX 2.1	March 1992	32M-byte memory, I/O subsystem, 66M-byte disk, operating system	$124,000 with FTX, $145,000 with VOS
Two logical CPUs*	VOS 11.5, FTX 2.2	Fourth-quarter 1992	64M-byte memory, I/O subsystem, operating system	$394,000 with FTX, $450,000 with VOS
Four logical CPUs*	VOS 11.5, FTX 2.2	Third-quarter 1992	128M-byte memory, I/O subsystem, operating system	$828,000 with FTX, $905,000 with VOS
Six logical CPUs*	VOS 11.6, FTX 2.2	Fourth-quarter 1992	128M-byte memory, I/O subsystem, operating system	$1,039,000 with FTX, $1,130,000 with VOS

* A logical CPU comprises two logic-clocking microprocessors on a printed circuit board, and all microprocessors are duplicated on a matching CPU board.

Source: Stratus Computer, Inc.

CW Chart: Stephanie Faucher

DG extends Aviion systems with RAID

BY KIM S. NASH
CW STAFF

WESTBORO, Mass. — Data General Corp. last week unveiled several Aviion-related products, including a redundant arrays of inexpensive disks (RAID) storage system for the Unix-based boxes. The move preceded this week's expected announcement of a fiscal third-quarter loss, DG's second consecutive period in the red after five quarters of profitability.

The new Motorola, Inc. 88100-based servers — which range from 39 to 235 million instructions per second (MIPS) — put the company in a "very competitive" position against commercial Unix stalwarts IBM and Hewlett-Packard Co., according to John Gantz, chief analyst at Dataquest/Ledgeway Group in Framingham, Mass.

Gantz said DG's symmetric multiprocessing features are attractive. The company said it booked more than 10 first-day orders for the new products from firms including Source Data, Inc., GE Retail Systems and Choice Courier Systems, Inc.

However, it is too soon to tell what kind of impact the products will have on DG's bottom line over the long term, observers agreed. Wall Street's consensus was that, like last quarter, the firm will post a loss resulting from a revenue shortfall and restructuring costs from a 1,000-worker layoff that was announced last quarter.

Although three new servers were introduced, HADA II, DG's high-availability disk array, was clearly the star of the show. Chairman Ron Skates ballyhooed the product, saying no other Unix vendor offers a high-availability storage subsystem, which is required by financial institutions and other users that need 24 hour-a-day data access.

RAID technology provides users with access to data when part of the subsystem fails. The "near fault-tolerant" design gives users a choice of RAID levels, including 0, 1, 3 and 5, according to DG.

"The HADA product was pretty impressive," Gantz said; it leaves DG "well-fortified for the commercial environment."

HADA II is packaged with five 500M-byte or five 1G-byte 3½-in. disk drives and can provide up to 20G bytes of data storage. Pricing for the product, slated to ship next month, starts at $35,000.

Also announced for delivery by year's end was an upgraded DG/UX operating system and two servers that expand the MIPS rating of the Aviion line. DG/UX 5.4.2 offers 60% better Transmission Control Protocol/Internet Protocol performance and improved security features, the company said. It costs $550.

Onward, upward

The AV 8000-8 doubles the performance of DG's previous high-end Aviion model, the AV 8000

	AV 4605	AV 6280-20	AV 8000-8*
Processor	Single	8	8
MIPS	39	235	235
Memory (min/max)	32/128	128/768	128/768
Disk storage support	1.9G bytes to 58G bytes	320G bytes	320G bytes
Base price	$19,995	$200,000	$270,000
Availability	Now	Year-end	Year-end

*Packaged with disk array

Sequoia adds entry-level model to fault-tolerant line

BY MELINDA-CAROL BALLOU
CW STAFF

MARLBORO, Mass. — Sequoia Systems, Inc. last week unveiled an entry-level addition to the company's Motorola Corp. 68040-based line of fault-tolerant systems.

Dubbed the Sequoia Series 40, the system can incorporate up to four Motorola processors and complements the company's high-end Series 400. The four microprocessors can run concurrently at 25 MHz with 256K bytes of nonwrite-through cache. This contrasts with the Series 400, which can offer up to 32 processors.

The Series 40 also offers from 16M to 192M bytes of system memory, two to four I/O processors and VME-compatible buses, up to 88G bytes of physical disk storage, dual digital audio tape backup subsystems and battery backup.

At a starting price of $159,000, company officials said, the Series 40 offers "leading price/performance for Unix-based fault-tolerant computers."

Sequoia officials added that they have enhanced the performance of the Series 400 system by adding a turboprocessor element, which will upgrade the product from 25 to 33 MHz. They have also increased cache size from 1M to 4M bytes.

In addition, Hewlett-Packard Co., a partner and reseller for Sequoia, has introduced a version of the System 40 called the HP Model 1012.

Separately, Sequoia officials announced that their products will now support relational database management systems from Unidata, Inc. as well as those from Oracle Corp., Informix Software Corp. and Ask Computer Systems, Inc.'s Ingres Products Division.

CORRECTIONS

A story in the July 13 issue incorrectly said Intel Corp.'s DX2 clock-doubling technology doubles the external speed of the processor.

In fact, the processor runs twice as fast internally as externally.

.....

Because of a transcription error, an interview with Rockwell International Corp. Chairman Donald R. Beall in the July 13 issue referred to "gun-stops" that Rockwell supplied to the U.S. Navy; the firm, in fact, supplied gunships.

Similarly, Rockwell's automotive business, not its Allen-Bradley industrial automation business, manufactures door latches; the firm makes modems, not motors, for fax machines; and Mr. Beall's middle initial is R., not M.

.....

Because of an error in information provided to *Computerworld*, Aetna Life & Casualty Co. Chairman Ron Compton was mistakenly identified as a former executive at Emory Airborne Express in the July 6 issue. In fact, Compton has worked at the Hartford, Conn., insurer for 35 years.

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BART moves to Unix to ease maintenance

BY JEAN S. BOZMAN
CW STAFF

OAKLAND, Calif. — After 20 years of running its automated trains using an array of proprietary minicomputers, the Bay Area Rapid Transit (BART) system revealed last week that it is moving to open systems in a bid to build an easier system to maintain. And by the time fault-tolerant Unix systems are aboard the conductorless trains in 1995, BART hopes to have relational database management systems tracking their spacing and speed.

Some $30 million has been budgeted for new computers to cover a five-year, $300 million extension of the BART train system beyond its current 34 stations. The project is expected to break ground soon.

BART said it will build its next-generation control system with 50 Tandem Computers, Inc. Integrity Unix systems and Informix Software, Inc.'s relational database engine. The computers, which will be linked by a Transmission Control Protocol/Internet Protocol and Synchronous Optical Network, will be phased in over the five-year period. BART had withheld news of its purchasing decisions until the rejection of a protest by Hewlett-Packard Co. freed it to do so.

David Warwick, the director of BART's project to overhaul its computers, said last week that the new computers will be 10 times as powerful as the aging Data General Corp. MV 10000 systems they replace. "We're taking a quantum leap in terms of hardware," said Warwick, group manager of systems engineering at BART's engineering and construction department.

The Unix software will be easier to enhance and maintain than the current mix of DG MV 10000 machines: Digital Equipment Corp. PDP-8s, which manage displays of train destinations, and Modcomp Co. computers, which gather fare-collection data from automated ticket machines.

BART's current T1 network samples 15,000 data points 400 times per second to find power and rail problems.

The decision to move to open systems comes three years after the BART board fired Logica Data Architects, Inc., a systems integrator that ran up a $20 million bill developing a train control system that stretched BART's computers to capacity [CW, Nov. 27, 1989]. A 1989 independent audit of the Logica project found $2.67 million in cost overruns. In all, BART spent $40 million over 10 years, half of which was for Logica's train-control software.

However, the train-control software Logica developed is coming along for the ride. Twenty BART programmers will adapt it to Unix, starting in January.

BART is already using the Logica software on its DG computers. "It will take 18 to 24 months to" port the software, said Warwick, who was hired two years ago to overhaul the control systems.

BART plans to purchase a Unix software application to gather fare-collection data from its automated ticket machines and build a display system to show train destinations on top of the Informix RDBMS.

Bendix Notes push tied to quality initiative

CONTINUED FROM PAGE 1

tor of information systems and services at BAS, said that although he will eventually realize some cost savings, his main goal is to meet a total quality initiative that focuses on improved teamwork, increased communications and reduced response time.

Notes should answer the first two requirements, Everett said, which will then contribute to cutting response time.

Notes allows people in different time zones to work from the same repository of images, graphics, voice, documents and spreadsheets, he pointed out.

Along with the electronic mail and workgroup software, the company will be moving its business applications, such as spreadsheets and word processing, over to the local-area network. Everett said he is 99% certain Lotus will be tapped for the full suite of Microsoft Corp. Windows-based applications, including 1-2-3 for Windows, Ami Pro and Freelance.

Everett is in charge of about 1,000 personal computers, both in North America and in Europe. A $1.5 billion brake component segment of Allied Signal, Inc.'s $4 billion automotive sector, his group has just completed a six-month "real-world" pilot program involving 22 users who tested the applications software. A second pilot for Notes and the image and document management software is still in progress.

Everett said he plans to add 150 more users to the rollout by year's end, with another 250 slated for next year. He envisions about 10 LANs with approximately 100 users each for his bailiwick. Chances are good that the rest of the sector will then follow his lead, Everett added, bringing the total users involved to about 5,000.

One-stop shop

Everett said a deciding factor in moving from the SNA-based Professional Office System (Profs) environment running on an IBM 3090 to an Ethernet LAN running Novell, Inc.'s NetWare was that the company wanted a single vendor for all of its applications.

Everett said the only possible stumbling block to signing with Lotus would be if Lotus' European training and support facilities could not fulfill his needs. The company included audio features in the pilot for voice commentary and is talking about working with Picturetel Corp. to bring videoconferencing down to the desktop, he said.

The ability to add voice annotations to Notes documents would help, Everett said, but he envisions the Picturetel connection as aiding on-site training.

E. Allen Hershey, a partner at Ernst & Young in Ann Arbor, Mich., gave the thumbs-up to getting rid of Profs. "Anyone depending on SNA-type networks to provide communication at this time ought to be looking at doing this kind of a plan," he said, citing the slowness of the network as a big factor.

Everett said the mainframe environment will run in tandem with the LANs during the migration period. Allied Signal has been telescoping its data centers as part of a consolidation effort. The three sectors of the company are being moved into one data center in Tempe, Ariz.

Although the move is mainly geared to speed communications and reduce response time to customers, Everett said, "over time, we'll migrate the mainframe applications that make sense to the LAN."

For networking needs, Everett is using NetWare 3.1.1 running over Ethernet. He plans to implement unattended backups that will monitor the LAN and back up an unattended PC or server.

By moving onto a LAN, Everett said, he will also be able to remove the layer of midrange machines, such as IBM 9370s, now at most of the company's sites. Four midrange machines will be removed from U.S. sites during the next year, he said. There are no plans to turn over any staff, but he said he is retraining them in LAN-oriented programming.

PCs could save Knight-Ridder $1.7M

CONTINUED FROM PAGE 1

upgrades next year alone remains a factor likely to ultimately persuade him to continue with his plans.

Knight-Ridder Financial — a division of $2.2 billion Knight-Ridder, Inc.'s $330 million Business Services Group — is contemplating a $300,000 investment in redundant 486, 50-MHz, DOS-based PCs on a centralized local-area network to replace the Tandem processors that currently handle about 150 price-processing transactions per second. Boulderstone said he expects that number to swell to about 1,000 in two years.

It would cost $2 million to upgrade CPU capacity on the Tandem to accommodate business growth, Boulderstone said.

He said he is willing to live with a degree of downtime risk associated with networked PCs because "fault tolerance is a bit of a myth." Boulderstone explained that "there are many pieces in a system, and not all of them are fault-tolerant."

For example, the firm runs some services it inherited via a merger of the corporation's commodity and financial divisions last summer on Unix-based Hewlett-Packard Co. 9000 minicomputers; PCs serve as communications controllers and customer interfaces.

In addition, "we've had instances where the backup hardware was working fine but the software failed, or we had an electrical disturbance. You're always [vulnerable to] your UPS system and communications circuits," Boulderstone said.

Analysts said they consider a shift from Tandem to PCs sound from a hardware reliability and performance perspective. However, they deemed it risky with respect to some thorny software challenges facing the company.

Currently, sophisticated software for synchronizing traffic rerouting and backup is not available for PC LANs, meaning users must take on that nontrivial task in-house.

"Unlike software from Tandem or big software development companies with many users, [Knight-Ridder] will be testing the software's reliability itself," Dave Hill, a senior consultant at The Yankee Group in Boston, pointed out. "But if the company is saving a lot of money, it may be worth the risk" of some corresponding downtime.

To date, "there has not been a migration to fault tolerance in the PC world" either by users or vendors, said David Wu, a computer analyst at S. G. Warburg & Co. in New York.

Boulderstone acknowledged that "PCs are very reliable as long as you . . . write the software well." He said he is confident he has the programming expertise to meet that challenge.

Currently, Knight-Ridder's Tandems accept data feeds from the New York Stock Exchange, the Chicago Board of Trade and many other financial and commodity information-generating sources. The networked PCs would take over the job of receiving the data, converting it into a common format and transferring it to a communications controller that merges it and sends it to customers.

While PCs would take over the Knight-Ridder division's pricing service — which broadcasts real-time commodities prices to farmers, brokers, grain elevator operators and others — the Tandems would continue to handle the business' entire commodity news broadcasting service for the short term.

Knight-Ridder Financial has invested $4 million in its four Tandem Cyclone and four VLX processors. The firm's pricing service uses about 50% of the Tandem cycles now.

The PCs would free up the Tandems to serve the company's growing news service without costly processing power upgrades.

"We're convinced we can drive a very large number of prices through PCs, as long as we don't do a lot of disk I/O," Boulderstone said.

AD/Cycle focus downsized

CONTINUED FROM PAGE 1

Repository AD/Cycle user group in Chicago.

Repository Manager/MVS — a key piece of mainframe software that was originally intended as the means by which customers could keep track of development projects throughout the enterprise — has been dogged by political infighting and technical problems since its announcement in September 1989. As a result, it never won widespread user favor and is installed at just a handful of user shops.

Technical issues involved performance and an underlying model that some said was inadequate from the beginning. Political woes sprung from trying to work with various AD/Cycle development partners — a case of too many cooks spoiling the broth.

"They tried to accommodate everybody and probably made it more complex than they had to," said Dick Stromberg, a consultant at Du Pont Co. in Wilmington, Del., and a Repository Manager customer, although his shop is not actively using it.

Muddy waters

As a result, Repository Manager's direction has been muddled. IBM managers went from promising OS/2 support in March 1989 to saying in October 1990 that no OS/2 support would be forthcoming. In January, an IBM marketing manager said the Application System/400 platform would be the next to have a version of Repository Manager, but that plan seems to have been superseded by the OS/2 LAN and AIX versions.

In fact, some sources, including one at IBM, have said that the company will functionally stabilize, as in halt new development, of the mainframe repository — a charge that an IBM spokesman denied. However, the company had also initially denied it was killing the LAN version of OfficeVision but later acknowledged its termination [CW, June 8].

"They'll chill Repository Manager/MVS but not kill it," said Michael West, an analyst at Gartner Group, Inc. in Stamford, Conn. Instead, observers said, IBM will shift mainframe resources over to the LAN and Unix versions.

"Overall, we're fairly pleased" with the coming OS/2 and AIX wares, said Eric Jones, manager of data services at the Arizona Department of Transportation in Phoenix and one of the few active Repository Manager users. "We'll now have some other options for software development."

He said she was also happy with the original Repository Manager, which his shop has used to develop its tools.

However, others were not so sure that the new direction would be a hit. "There are other LAN and Unix repositories available on the market and no particular reason to get into an IBM solution," Fosdick said.

Among these is Minneapolis-based InfoSpan Corp.'s InfoSpan, a repository product that runs on OS/2 and Unix. IBM salesmen have pitched this product to some customers, and the firm is said to be among the new players in the workstation group of AD/Cycle vendors.

IBM has been briefing AD/Cycle customers about the pending announcements, which will include new development and marketing partners. Still unclear, however, is how IBM will reconcile what has until now been two separate software development environments: one for the AIX world and another for mainframe customers. IBM resells Hewlett-Packard Co.'s Workbench, along with other third-party packages, on the RISC System/6000 platform.

Ira Morrow, a vice president at Shearson Lehman Brothers, Inc. in New York, said he applauds the new direction, which he is due to be formally briefed on in about a week. "More power to them: If it's not working, make it work," he said. If IBM's announcement yields a "practical and pragmatic" approach to software development, Morrow said, he would evaluate it.

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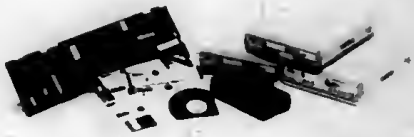

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NEWS SHORTS

Kurtzig steps down as Ask CEO

Sandra L. Kurtzig, founder, chairman and chief executive officer of The Ask Cos., will relinquish her CEO post Sept. 1. Pier Carlo Falotti, who last week resigned as president and CEO of Digital Equipment Corp.'s European operations (see story page 1) and is a 23-year DEC veteran, was named her successor. Kurtzig will remain chairman, while Falotti will join the board of directors. Almost 50% of Ask's more than $400 million in sales come from abroad.

USL sues Berkeley Software

Unix System Laboratories, Inc. (USL), a Summit, N.J.-based subsidiary of AT&T, has sued Berkeley Software Design, Inc. for trademark infringement, false advertising and unfair competition. The action, filed in U.S. District Court in New Jersey, seeks injunctive relief and unspecified punitive damages. Berkeley Software Design, which distributes a version of Berkeley Software Design Unix system software, has filed for dismissal.

Du Pont to step up halon phaseout

Du Pont Co., the largest producer of halon, a fire-extinguishing gas widely used in computer rooms, said it will stop production of the chemical by the end of 1993 — one year earlier than planned. In February, President Bush ordered a halt to the production of halons and chlorofluorocarbons by the end of 1995. Du Pont also unveiled what it said is the first commercially available halon alternative, FE-13, which reportedly has "zero ozone-depletion potential" and costs about the same as halon. Halon equipment cannot be used with FE-13 unless it is modified.

Storage Tek's income drops

Storage Technology Corp. reported lower net income and earnings per share for the second quarter ended June 26 vs. the same period a year ago. Net income was $6.6 million, compared with $18.8 million last year. Chairman Ryal Poppa attributed the "disappointing financial performance" mostly to higher expenses and slower buying decisions.

IBM hosts send software to Macs

Tangram Systems Corp. said it has enhanced its AM:PM offering to provide automatic software distribution from an IBM MVS host to the Apple Computer, Inc. Macintosh. The Macintosh communicates with the IBM host via Apple's SNA-PS over Token Ring or Synchronous Data Link Control. AM:PM also supports distribution to DOS, OS/2 and Novell, Inc. NetWare environments.

MCI names executives

MCI Communications Corp. has shuffled its executive staff and consolidated four regional sales divisions into two national units. Jonathan C. Crane, former president of MCI's Eastern Division, was named president of MCI National Accounts. Timothy F. Price, previously senior vice president of sales and marketing for MCI consumer and commercial markets, was named president of MCI Business Services.

Short takes

Borland International, Inc. instituted a new policy that offers health insurance benefits to gay or heterosexual unmarried domestic partners of its employees; for example, those who live together and share fiduciary responsibilities. . . . **NCube Corp.** introduced the 2E series of massively parallel computers, an entry-level family that delivers up to 1,280 million instructions per second at a price of less than $2,500 per transaction per second. . . . **TRW, Inc.** spun off a company to commercialize its Fast Data Finder, a speedy text-scanning and routing device that the company had developed for military and intelligence agencies. TRW holds a minority interest in the Pasadena, Calif.-based spin-off, **Paracel, Inc.**

VMS opened for Alpha initiative

X/Open XPG3 branding is key to winning more government contracts

BY MELINDA-CAROL BALLOU
CW STAFF

BOSTON — Digital Equipment Corp. last week unveiled its "Alpha-ready" systems, which, as expected, run an open systems implementation of VMS. These products are intended to smooth the transition to DEC's next-generation reduced instruction set computing architecture, as well as provide an incentive to purchase revamped VAXs, DEC officials said.

Crucial to a successful revival for the company will be DEC's ability to effectively market Alpha products outside the vendor's current user base. "If Alpha fails, DEC is dead," said Rikki Kirzner, a senior analyst at Dataquest, Inc., a market research firm in San Jose, Calif. "And while the technology is very competitive, DEC is going to have to convince more than its own user base to go with the Alpha processors."

Included in the product line are the following: the VAXstation 4000 Model 90 workstation, with prices starting at $11,995; the MicroVAX 3100 Model 90 and VAX 4000 Model 100 servers, with prices starting at $41,694; the VAX 4000 Models 400 and 600 servers, with prices starting at $88,467 and $148,411, respectively; the VAX 7000 series of servers, with prices starting at $253,472; and the VAX 10000 series, with prices starting at just over $1 million. All products will ship by September, except for the 10000, which ships in October.

Delivery deluge

In addition to the hardware platforms, DEC said, it will also ship turnkey Advantage Server Solutions in 16 different configurations, Accessworks capabilities and new disk and tape storage solutions.

DEC also announced fault-tolerant Alpha-ready servers and enhanced Fiber Distributed Data Interface clustering for disaster recovery, for which pricing and shipping details will be given at a later date. The new clustering allows data centers to be separated by hundreds of miles via the use of T3/E3 services.

Of even greater potential significance for DEC was the announcement of the X/Open XPG3 branding for Open VMS and Posix compliance, which can free users from proprietary isolation while giving DEC the ability to compete for government contracts.

"DEC went through a Stephen King-class nightmare of tests to get XPG3 branding for Open VMS. There is no historical precedent for any but a Unix operating system passing them. This breaks the correlation between Unix and the term 'open systems,'" said George Shaffner, chief operating officer at the X/Open Consortium Ltd.

Many industry analysts reacted positively to the XPG3 branding, though some were skeptical about its impact.

"While XPG3 is important, it does not go far enough in terms of making applications transparent across platforms," Kirzner said. "You can't run Unix files on VMS with a simple recompile, for instance; you still have to rewrite them. But it does prevent the erosion of the VMS installed base by giving VMS users a path toward open solutions — this means that there'll be some work involved, but they won't be locked in."

Olsen resigns on eve of big loss, layoffs

CONTINUED FROM PAGE 1

sure the successful introduction and adoption of Alpha-based systems by current DEC users and prospects.

Users contacted last week were surprised by Olsen's plans to depart at such a decisive juncture for the company. Olsen was reportedly pressured by the board to retire, although a company spokesman said the decision to leave was ultimately his own. As recently as two months ago, Olsen said he was not planning to retire soon.

All of the users spoke warmly of Olsen and his contributions to the industry. "When a great entrepreneur leaves a company that's never been led by anyone else, it's significant. We'll have to see how the company moves on," said Al Chaby, information systems director at Envirosafe Management Services, Inc. in Valley Forge, Pa.

Others were clearly shaken by the news of Olsen's retirement. "This is frightening," said Ray Sasso, chief information officer at Simplot Co. With $20 million and 15 years invested in DEC equipment, the Boise, Idaho-based food processing firm has a lot riding on DEC's moves.

While generally maintaining an interest in DEC's upcoming Alpha products, some users said they nonetheless will wait to see what shakes out as the new chief executive officer takes the reins.

Simplot, for example, had planned to be one of the "first kids on the block" with Alpha technology, but the top-level shakeup will force the company to reconsider that investment, according to Sasso. "I'll certainly have to sleep on it now," he said. "There's a very big hole now, and I don't know if it can be filled."

Industry analysts were more positive about the potential impact of Olsen's departure. "DEC needs new leadership and vision — someone who is not carrying around the shackles of the past and who can see where DEC has to go with a little more objectivity," said Rikki Kirzner, a senior analyst at Dataquest, Inc., a market research firm in San Jose, Calif.

Palmer's track record shows he is willing to wield the ax, according to analysts. As head of DEC's semiconductor and then manufacturing operations, Palmer closed down some 10 facilities and laid off thousands of workers.

"He's decisive and gets things done, which is what the company needs," said Bill Sines, vice president of Technology Investment Strategies Corp., a market research firm in Framingham, Mass.

Palmer's appointment is effective Oct. 1, pending board approval. Olsen, however, will remain on the board of directors until November 1993.

Neither Olsen nor Palmer were available for comment last week.

Customers should see the impact of the ongoing reorganization immediately. DEC is redoubling its efforts in vertical markets and is focusing on getting sales and marketing personnel out to user sites as often as possible, according to officials last week.

Direct sales, however, are expected to be deemphasized in favor of less costly marketing via OEM and value-added reseller channels as the company turns to more turnkey solutions, according to internal DEC sources.

As a prelude to the layoffs — expected to begin in significant numbers next month — DEC business groups will receive budgets this week for the upcoming fiscal year. They will have to provide final expense and head count projections to the corporate office by July 31, according to internal sources at DEC.

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OSF struggles to right its listing ship

CONTINUED FROM PAGE 1

details, we have to agree that the generic direction of USL and OSF are alike," Pieper noted. "I think OSF is looking for the best strategic and business position they can play."

That search is taking the OSF through a rather awkward stage in its development as the vendor-supported group shifts its focus from products based solely on Unix to cross-platform software technologies, or "middleware."

The key issues that Tory and his board are hashing out this summer include the following:

- How to move the $55 million nonprofit foundation toward self-sufficiency by the end of next year (see story below).
- How to manage the accelerating amount of engineering work done by outside companies.
- How to redistribute the OSF's internal resources to speed up development of the system and network management software that users are demanding: the Distributed Computing Environment (DCE) and Distributed Management Environment (DME).
- How to improve the quality of OSF source code and eliminate bug fixes duplicated by vendors.

"OSF is trying to track where the needs of the industry are," said Ted Hanss, chairman of the OSF's end-user steering committee and head of the Center for Information Technology Integration at the University of Michigan. "They started off with an operating system platform [OSF/1], then moved to DCE and are now evolving to distributed management with DME."

DCE is an integrated set of seven products — including a distributed file system and security, directory and naming services — that enable distributed computing across a mixed network of Unix and proprietary systems. DME is a complementary set of technologies for enterprisewide network and systems management.

Dealing with delays

Delays of 12 to 18 months have plagued both OSF/1 and DCE, prompting this latest round of soul-searching by OSF's management and six sponsors: IBM, Digital Equipment Corp., Hewlett-Packard Co., Groupe Bull, Hitachi Ltd. and Siemens/Nixdorf Informationssysteme AG.

Although it has been shipping to vendors since 1990, OSF/1 still has scant market presence, which analysts blamed largely on initial quality problems with OSF/1 source code and slow-motion adoption of the kernel by IBM, DEC and HP. DCE products will not appear until later this year or early 1993, and DME products will not show up in end-user shops until 1994, analysts estimated.

In four years, the OSF has had mixed success with its products but is acclaimed for engendering cooperation among the industry's fiercest competitors.

Still, only one of its five major technologies can be declared a success at this point: the Motif graphical user interface, which the OSF claims as a de facto standard with more than 500,000 installed seats.

The market competitor, Sun Microsystems, Inc.'s Open Look graphical user interface, has roughly 550,000 installations. IBM, HP and other major systems vendors have standardized on Motif as their user interface and are shipping it with their Unix workstations.

The foundation has reached a point now where buggy code and overdue deliveries are no longer acceptable to its sponsors or end-user members.

"Originally, [the sponsors] said, 'Give us the technology and don't worry about the quality. We'll deal with that because that's part of our productization,'" Tory said. Then, as the economy worsened and the recession took its toll among the sponsors, the thinking changed.

"We do want OSF to do more productizing," said Jim Bell, director of integrated information management at HP. That means improving code quality, accelerating delivery schedules and doing more testing in-house rather than duplicating such efforts at each vendor company.

"An extra month spent at OSF can cut two months off the time [the source-level product] sits inside companies like HP," Bell said.

"We were a little naïve in what we thought would happen," said Mike Saranga, president of the OSF's board of directors and IBM's assistant general manager of systems, structures and management. "Our crystal ball was too foggy in 1988."

Saranga said that while the sponsors' vision for the OSF in the open systems market has not changed, the road has taken a few unexpected turns. "We will nail it down and get OSF on a steady course" in board meetings this month and next, he added.

Batting 1-for-3

Despite the three largest sponsors' stout declarations of support two years ago for a single, standard Unix operating system across their platforms, DEC is the only one to wholeheartedly adopt the OSF/1 kernel. IBM and HP, worried about disrupting their customer bases, are proceeding more cautiously by adopting pieces of the kernel and moving toward compliance with the OSF's Application Environment Specification (AES).

"The AES is really the most critical endorsement we need from the vendors," Hanss said. The AES is a set of specifications that correspond to the OSF/1 reference implementation. USL is pledging support for this set of specs next year, and OSF/1 in turn will support USL's Unix System V specifications. The result should be easily portable applications between System V, Release 4 and OSF/1.

Most users, however, are far more interested in delivery of the integrated system and network management tools in DCE and DME than in the OSF/1 kernel.

"When you get people's appetites whetted, you have to give them something to eat," said Sheri Anderson, senior vice president of production and system services at Charles Schwab & Co. in San Francisco.

"OSF did an excellent job with Motif and a real good job on DCE, but they haven't delivered much of what the market needs," Hoffman agreed. "Their timelines may have been overly ambitious. Things turned out to be more complex than they thought."

(Next week: The OSF's impact on open systems.)

Searching for self-sufficiency

Money — and how to make more of it — is the single biggest problem facing the OSF.

With 300 employees and annual spending levels reaching $55 million last year, the OSF is casting about for ways to reach self-sufficiency by 1994.

The nonprofit foundation is currently beholden to its major sponsors for more than half of its budget — $30 million in 1992, then $22.5 million in 1993. The remaining funds come from government grants, contract research and licensing fees.

According to OSF President David Tory, annual spending levels of $55 million to $60 million could sustain the company's mission over the next several years. However, reaching the point of self-sufficiency, he added, "takes a lot longer than everyone thought."

Delays in product deliveries and a cooler market reception than anticipated have undermined the plan for self-sufficiency, analysts noted.

Revenue breakout by technology
(in thousands)

1990		1991	
Motif	$4,149	Motif	$8,733
OSF/1	$1,056	OSF/1	$5,508
DCE	$53	DCE	$570
		DME	$22

Tory is especially optimistic about the DCE system management software, which the OSF projects will help boost licensing revenue to $50 million by 1994.

Although revenue from the OSF technologies — Motif, OSF/1, DCE and the DME — is beginning to ramp up (see chart), the roughly $15 million in licensing fees cannot sustain the organization.

All told, sponsor funding has contributed more than $180 million to the OSF since its founding.

The original nine sponsors — each pledging $4.5 million annually for the first three years — shrank to six with the mergers of HP/Apollo Computer, Inc. and Siemens/Nixdorf Informationssysteme, and the withdrawal of Philips NV.

The six current sponsors, who signed on for another two-year funding stint at $5 million each, are IBM, DEC, HP, Groupe Bull, Siemens/Nixdorf and Hitachi.

The 340 member companies together contributed about $6 million in dues to the OSF in 1991, with 60% to 70% of them paying the full $25,000 annual fee while the universities and nonprofit companies pay $5,000 or less.

Grants and contracts with the OSF Research Institute, plus other services, accounted for $7 million to $8 million last year.

MARYFRAN JOHNSON

OSF's technology lineup

Motif
Graphical user interface

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OSF/1
Unix operating system

Shipping to vendors since 1990. Approximately 30 site licenses. Full distribution license: $85,000 (increased this year from $50,000). Additional CPU licenses: $3,000 each.

DCE
Distributed Computing Environment

Integrated set of seven system software management products. Available to end users in late '92/early '93. Source license with full distribution: $150,000. Limited distribution: $15,000.

DME
Distributed Management Environment

Integrated set of technologies and standards for enterprisewide network and systems management. Available to end users in 1994. "Snapshot" code available now for $1,000.

ANDF
Architecture Neutral Distribution Format

Compiler technology to produce a single version of shrink-wrapped software for multiple platforms. Tied to DCE and DME. First product slated for 1993 from Unix System Laboratories. Pricing not available.

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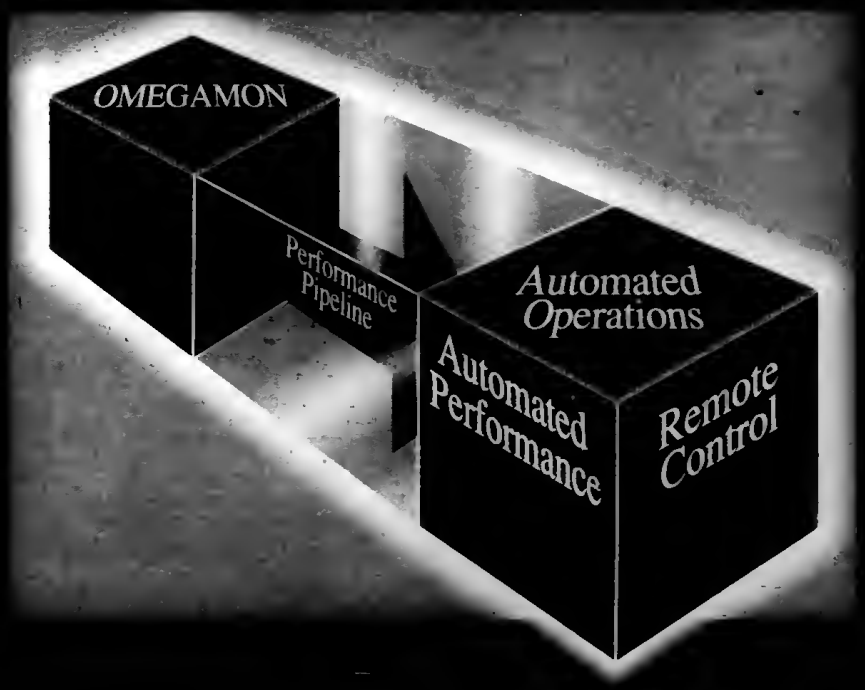

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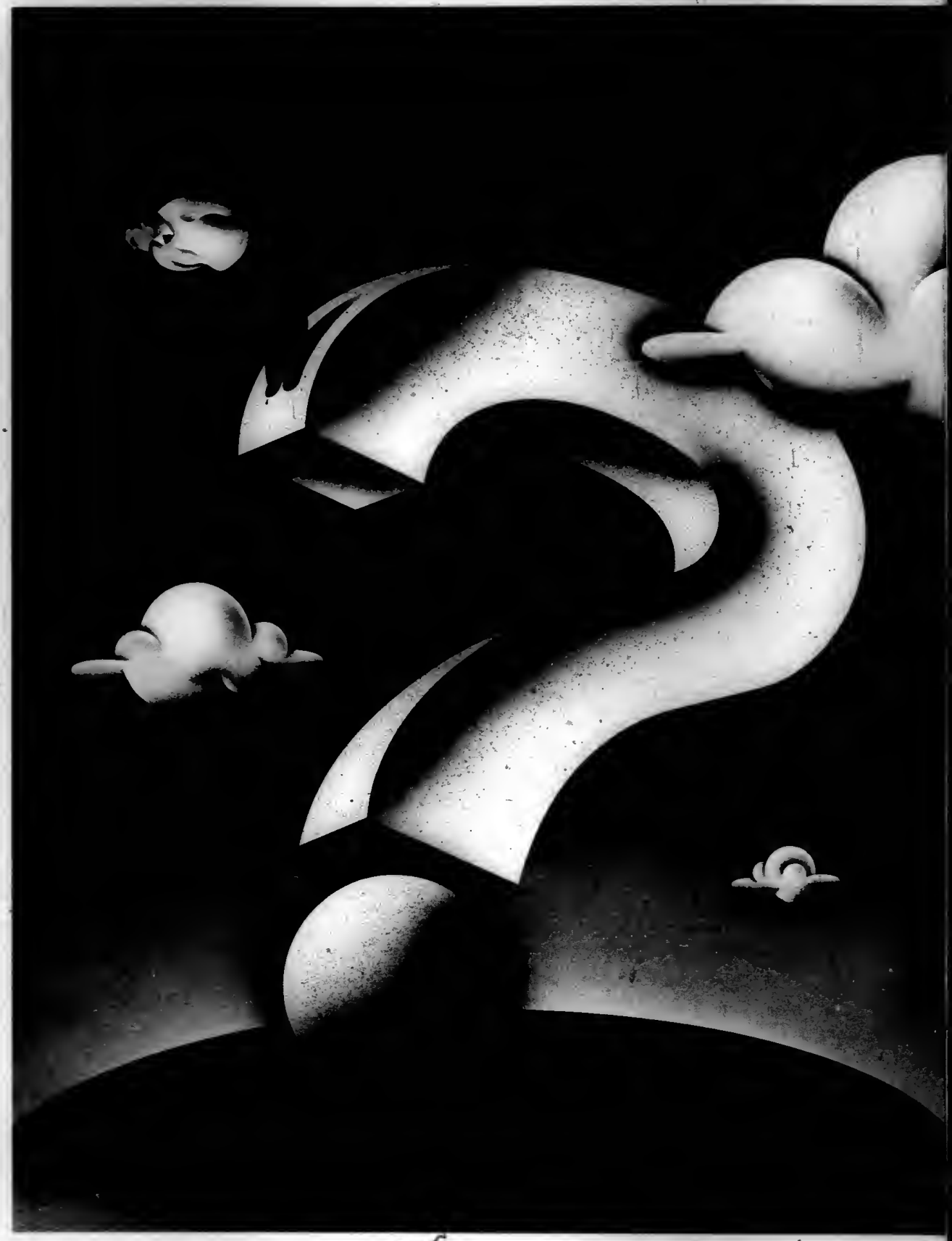

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FCC to open airwaves to radio-based wireless LANs

BY GARY H. ANTHES
CW STAFF

WASHINGTON, D.C. — The Federal Communications Commission had good news last week for a coalition of computer and communications companies when it revealed a plan to allocate 20 MHz of radio spectrum for use in wireless networks. The plan is tentative pending receipt of public comment and is likely to become final in the first half of 1993.

The slice of spectrum, which under the proposal could be used without a license, is intended for user-configured wireless local-area networks and cordless private branch exchange systems.

"It's a good result for the computer folks," said Henry Goldberg, an attorney representing Apple Computer, Inc., which led the industry in a petition for 40 MHz of radio frequency. Goldberg said the Wireless Information Networks Forum will continue to seek a greater allocation from the commission. "But this is solid," he added.

In addition to Apple, the forum includes AT&T, Digital Equipment Corp., Grid Systems Corp., Hewlett-Packard Co., IBM, NCR Corp., IBM's Rolm Systems, Sun Microsystems Computer Corp., Tandem Computers, Inc. and Ungermann-Bass, Inc.

An Apple spokeswoman said the firm wanted to add radio-based personal computer data services capabilities to its Newton family of "personal digital assistants" announced in May and due for delivery early next year.

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Mac gains FDDI links

BY JOANIE M. WEXLER
CW STAFF

Users of Apple Computer Inc.'s Macintosh II and high-end Quadra computers will finally be able to leverage the 100M bit/sec. speeds of Fiber Distributed Data Interface (FDDI) local-area networks next month.

An announcement last week by Cabletron Systems, Inc. and a preannouncement made to *Computerworld* by Codenoll Technology, Inc. render the two vendors the kickoff suppliers of FDDI interfaces for Apple's multimedia-oriented computers. Quadras and enhanced Macintosh IIs tend to run bandwidth-intensive applications that require FDDI's high speeds, analysts noted.

Jim Hamstra, a consultant at Stanatek in Shorewood, Minn., cited prepress color separations in publishing houses and video as common Quadra and Macintosh II applications with the bandwidth requiring FDDI.

Shipping soon

Cabletron said it will ship a $2,995 single-attached, fiber-based card in 90 days. Because FDDI LANs were designed with two counter-rotating rings for redundancy, each LAN node must contain a connection to each ring. Either the network adapter must contain two connections or a single-attached workstation must link to the second ring through a concentrator.

The cost of a Cabletron FDDI attachment would thus be $2,995 plus the cost of one port in an FDDI concentrator (about the same price) from another vendor, rendering the entire connection about $6,000.

Meanwhile, Codenoll said it will ship at the end of next month a $3,995 single-attached fiber card, a $4,995 dual-attached fiber card and a $3,495 card that links the NuBus computers to shielded twisted-pair wiring. However, the shielded twisted-pair cards will not comply with the specifications currently under construction for a combination unshielded twisted-pair/shielded twisted-pair standard, according to Brian Ramsey, director of marketing.

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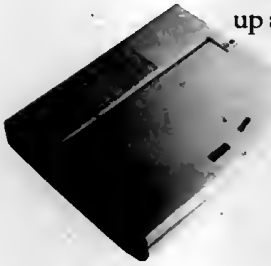

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Software	MS-DOS 5.0 and MS-Windows™ 3.1

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DECpc 316sx

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Memory	3MB Memory (exp. to 13MB)
Storage	122MB IDE Hard Disk 3.5" 1.44MB Floppy
Resolution Mode	1024 x 768 SVGA Adapter with 512K Video RAM
Display	14" VGA Color Monitor
Keyboard	101-key Keyboard
Mouse	Three-button Mouse
Software	MS-DOS 5.0 and MS-Windows 3.1

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DECpc 420sx

Microprocessor	Intel 486sx running at 20MHz
Memory	4MB Memory (exp. to 32MB)
Storage	122MB IDE Hard Disk 3.5" 1.44MB Floppy
Resolution Mode	1024 x 768 SVGA Adapter with 512KB Video RAM upgrades to 1MB for 256 color support
Display	14" Multi-sync VGA Color Monitor
Keyboard	101-key Keyboard
Mouse	Three-button Mouse
Software	MS-DOS 5.0 and MS-Windows 3.1

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Memory	2MB Memory (exp. to 8MB)
Storage	40MB IDE Hard Disk 3.5" 1.44MB Floppy
Display	TST Backlit VGA
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Keyboard	84-key Keyboard
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Choosing the right PC made simple

I am interested in a
386 486 Other Not Sure

How many applications will your PC(s) run in a typical workday?

How many PCs do you anticipate purchasing over the next 12 months?

Are you interested in leasing? Yes No

Immediately 1 - 3 months
3 - 6 months 6 - 12 months

What best describes the type of work the system will be used for? (Check all that apply)

- O Word Processing
- O Database (filing records)
- O Retail Store Management
- O Education
- O Engineering
- O Scientific Research
- O E-Mail
- O Order-entry
- O Financial Calculations
- O Desktop Publishing
- O Design (CAD/CAM)
- O Industrial Process Control
- O Software Development
- O Other industry-specific applications (please specify)

Which of these graphics-oriented applications best describes your needs? (Check all that apply)

- O Desktop Publishing
- O CAD/CAM
- O Animation
- O Realtime Modeling
- O Image Processing
- O AutoCad
- O Business Graphics

How many people work in your group, department or small business?

O Less than 10 O 10-20 O 20-45 O More

Is your desktop operating system

- O DOS
- O DOS with Windows
- O OS/2
- O MAC
- O UNIX™
- O VMS
- O Other

LAN Communication

How many PCs do you have installed?

From how many manufacturers?

What kinds of connections does your PC(s) require? (Check all that apply)

- O Links with other PCs in the immediate surroundings
- O Connection to the local area network (LAN) throughout a building
- O A line to a host system in a remote location

What kind of media (cable) is used in your LANs today?

What is the networking software now being used in your company?

What kind of host system will your PC communicate with?

O Digital O IBM O Other

What kind of service do you need?

- O On-Site Hardware Support
- O Software Support
- O Telephone Support
- O Training
- O FAX Hotline

How many of your users take portables on the road?

Do you currently have a service contract(s) for your PCs?

O Yes O No

How many?

Does your service provider offer Multivendor Support?

O Yes O No

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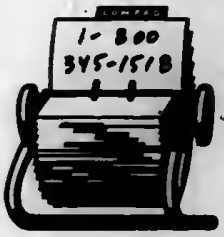

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ADVANCED TECHNOLOGY

TECH TALK

When the chips are up

■ A new transistor technology developed by IBM may someday become the basis of a new generation of high-speed computers. BiCMOS technology integrates common bipolar transistors with power-saving CMOS field-effect transistors, providing high performance with lower power consumption. The combination should allow developers to implement transistors with the best features of each, according to IBM.

It's virtually a reality

■ Virtual reality will come closer to real life this September, when the Institute of Electrical and Electronics Engineers, Inc. (IEEE) holds a videoconference on the subject. On Sept. 30, the session, titled "Emerging Technologies: Will Your Company Be Ready?", will give engineers and students a chance to discuss computer aids for product design and manufacturing control and virtual reality for planning, training and education. Registration for corporations starts at $100 per person. Registration information is available from IEEE in Piscataway, N.J.

Up, up and away — sort of

■ The second annual International Aerial Robotics Competition got off the ground despite the fact that several of the contestants did not. Entries were received from eight colleges (twice as many as last year), but only four were able to fly under computer control. And none of the contestants were able to perform the assigned tasks: finding, retrieving and carrying metal disks across a 3-ft barrier. This year's $5,000 first-place winner was a "flying gyroscope" built by the Georgia Institute of Technology team and based on, of all things, a hula hoop. Second and third place went to helicopter-like robots from the Southern College of Technology and a second Georgia Tech team, respectively.

Extra! Extra! Newspapers paperless!

Sophisticated features beef up portable electronic newspapers to rival printed word

BY ELLIS BOOKER
CW STAFF

From its inception, the idea of reading a newspaper on a computer screen has been greeted by most daily newspaper publishers as, well, unnatural.

After all, a *newspaper* continues to be an essential part of the morning routine for tens of millions of readers.

But things are changing. More powerful technologies on the desktop, such as graphical user interfaces and intelligent search algorithms, make it easier to navigate through an electronic document. And on-line service providers are getting better at packaging information for local readers.

Media companies are concerned that eventually their share of the local market will come under assault. But others are taking the electronic delivery bull by the horns.

At your service

Enter Chicago Online, a joint-venture between information network provider America Online, Inc. and Chicago's Tribune Co., the media giant that owns, among other properties, the *Chicago Tribune*. The service was announced in mid-May.

"I think you have to be careful taking a published vehicle and extrapolating it into an electronic [product]," said Gene Quinn, general manager at Chicago Online. According to Quinn, while other media companies have tried proprietary local on-line services, Chicago Online is the first partnership between a local news-gathering entity and a national on-line service.

The result that Quinn said he and his colleagues hope for is a $7.95 per month interactive information and entertainment service emphasizing local stories and information, including classified advertising.

But why would a reader choose this electronic "paper" over the traditional form?

Jim Thomson

"In the short term, it's the ability to interact with the owners of the ink and paper and others who share your opinions," Quinn said. The longer term value, he said, will hinge on what he called "transaction services," which might include an electronic advertisement from which the reader could place an order or stock quotes from which a reader could access a company profile.

In addition, the electronic format suggests "individual databases, tailored to demography and psychographic segments," Quinn said.

Still, analysts are cautious, agreeing with Quinn that questions of how this future product ought to be packaged are of supreme importance.

Yet the potential benefits to the publisher's bottom line are inescapable. Take the mundane issue of the price of newsprint, which George Sacerdote, a vice president at Arthur D. Little, Inc. in New York, said is a publisher's largest expense after salaries.

Although noting that a modern daily newspaper is "basically an electronic product with a paper skin," an even bigger question mark is how advertisers, who pay the lion's share of a newspaper's bills, will be incorporated into this format.

"Fundamentally, a newspaper is an advertising medium. . . . Advertisers pay the bills. The question is, how do you preserve this business model in an electronic paper?"

So far, at least, the higher subscription-costs of electronic news media have made this a moot question. But according to Sacerdote and others, in order to drive the cost of the electronic paper down to appeal to that vast "middle market," advertisers will have to be wooed to the medium.

"It's much too soon to tell how advertisers are reacting to these services," Quinn said. "There just hasn't been enough experience."

Competition to come

While both the business model and the look-and-feel of electronic papers sort themselves out, a new wrinkle has been added by two emerging technologies: portable computers and wireless networks.

Portable devices — laptops, pen-based computers and a new generation of palm-size machines such as Apple Computer, Inc.'s Newton — suggest a delivery vehicle for an electronic paper that can be carried on a commuter train on the way to work, its stories updated regularly via wireless radio networks.

Roger Fidler, director of new media technology at the Knight-Ridder, Inc. newspaper chain, is one of those betting that portability will be a key ingredient of what he has called the "mediamorphosis" of publishing.

But Quinn said he thinks there will be a preponderance of "alternative" delivery vehicles for news and information in coming years. "You have to think of the information independent of the medium," he said.

On-line, but not on the move

What would cause a typical reader to prefer electronic, on-line news — delivered via a desktop or portable computer — to that conventional and extremely familiar medium, the daily newspaper?

"The electronic product can filter information. You get what you want with less volume to wade through," said Chris Elwell, an analyst at Simba Information, Inc. in Wilton, Conn. For instance, the sports enthusiast can check baseball scores without having to flip through pages in the business section.

Yet only a fraction of people logging on to on-line information networks use the medium for this purpose, Elwell said: "My guess is something like 15% or less are checking news."

In its most recent study, "Online Services 1992 Review, Trends & Forecast," Simba estimated that the total number of subscribers to "end-user oriented" on-line services was just 2.7 million as of the end of last December — about the same circulation of *The Wall Street Journal* alone.

This relatively tiny universe of users has made it, to date, unattractive to advertisers, who largely foot the bill for paper-based magazines and newspapers.

"It'll be a long time until we get to an advertiser-supported payment structure, and we may never get there," Elwell said.

ELLIS BOOKER

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OS/2

	OS/2: Win-OS/2 Full Screen	DOS 5.0 & Win 3.1 Full Screen
WordPerfect® (spellcheck)†	38.5 sec	43.6 sec
AmiPro™ 2.0 (print)††	95.1 sec	104.6 sec
Preemptive multi-tasking of Win apps	YES	NO
Crash protection	YES	NO

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*Upgrade from Windows, $49, upgrade from any DOS, $99, $139 base operating system. These prices valid only when ordered directly through IBM. Proof of purchase required. Dealer prices may vary. Offer valid in U.S.A. only, expires 7/31/92. Shipping and handling not included. **In Canada, call 1 800 465 7999. Tests conducted by NSTL. System under test is a PS/2 57SX w/4MB RAM and an 8513 VGA display. Under Windows 3.1 applications were loaded and/or executed from the Windows 3.1 Program Manager. Under OS/2 applications were also loaded and/or executed from the Win-OS/2 Full Screen Program Manager. Both Windows 3.1 and Win-OS/2 use a disk cache of 64KB. †Word processor spellcheck. The time required to spellcheck a document with no spelling errors. Open the Word Perfect for Windows 5.1 document entitled macro.doc. Select TOOLS from the menu bar, then select SPELLER. Select OPTIONS from the SPELLER menu bar, and deselect all of the options. Click OK. Test was timed from the click until the user regained control of the application. Macro.doc contains 21 pages and is 47,455 bytes. ††Word Processor Print. The time it took to print a word processing document. Open the AmiPro 2.0 document entitled printtest.sam. Select FILE from the menu bar, then select PRINT. Select FROM page 1 to 1 and click OK. The test was timed from the click until the first page completed printing on the printer. Windows 3.1 used the IBM LaserPrinter 4029 PS17 PostScript printer driver shipped with the Windows 3.1 software package, and Win-OS/2 used the IBM 4029 v2.1 (17 font) PostScript printer driver shipped with the OS/2 2.0 Operating System using LPT1.OS2. NSTL makes no warranties, express or implied, as to results to be obtained by any person or entity from use of the services or the results thereof, or any information or data included therein. NSTL makes no express or implied warranties of merchantability or fitness for a particular purpose or use with respect to the services and/or results thereof, or any information or data included therein. IBM and OS/2 are registered trademarks and OS/2 Crash Protection is a trademark of International Business Machines Corporation. All other products are trademarks or registered trademarks of their respective companies. © 1992 IBM Corp.

EDITORIAL

Out like a lamb

So much for grand plans.

As we report this week, IBM has shifted its efforts on Repository Manager/MVS, the keystone of its AD/Cycle software development strategy, to developing versions for smaller platforms. If Repository Manager/MVS dies, it will take with it perhaps the last potent argument IBM had for users to build new applications on mainframes.

IBM's resource shift, coming barely two years after the skeletal Repository Manager/MVS code shipped, says a lot about the changes going on at IBM and the newfound muscle of corporate IS customers. Repository Manager had the benefit of all the marketing push IBM could put behind it: controlled prereleases to analysts and the press, an impressive rollout and the backing of a brace of IBM Business Partners.

But it has flopped in the market because it is fundamentally the wrong answer to user questions about how to deal with mounting application backlogs. Repository Manager's first release was a resource-hogging, host-based, grand plan solution to a problem that demanded fast and flexible tools. That's the old IBM at work.

Users quickly said, "No thanks." If they needed to, they would buy Texas Instruments' or CGI Systems' repositories instead. That's the new customer-driven market at work.

So IBM has now reined in the product and decided to concentrate its time and money on smaller platforms where users say they want to coordinate their CASE activities. That's the new, more responsive IBM at work.

To those who have followed IBM's mainframe software strategy for a while, the speed with which these events have transpired is breathtaking. In the past, IBM was willing to push badly built software products for years if it thought users would eventually buy them. DB2, for example, was a dog in its early releases but benefited from three years of aggressive price-cutting while IBM developers fixed problems. In contrast, lately IBM has been quick to pull the string or find outside help on products it once considered strategic. OfficeVision/LAN, for example, was yanked after only two years. Customers are dictating the rules, and even IBM has to play by them.

Where does Repository Manager go from here? Its original goal of unifying competing CASE standards is commendable, but IBM's choice of platforms wasn't. If IBM can deliver useful repositories on Unix, LANs and AS/400s and continue to build third-party support, then it will address specific IS needs to offload mainframe development. But leave the grand plans at home.

Paul Gillin, Executive Editor

LETTERS TO THE EDITOR

It's academic

I see little evidence that IS organizations consider it "good corporate policy" to get future leaders from the academic world, as Francis Walnut puts it ["Lofty ideas don't build systems," CW, June 15]. Instead, I see the same sort of anti-intellectual bias that he shows in his article.

The least tractable problems arise from a lack of good specification and design work, leading to an extended test phase, unreliable systems and a maintenance headache. Large projects are far more complex than anything the most talented individual can handle in a reasonable time period.

Ironically, it's the academic world where you are most likely to find the good "end-to-end" programmer. It's the commercial world where programming has little esteem and is seen as an entry-level position.

Andrew Raybould
Jersey City, N.J.

Image Innovation seeks to clear record

This is regarding "4GL development tool targets images" [CW, June 1], your coverage of Image Innovation's breakthrough in developing the Image Application WorkBench.

A couple of errors in this article may give a wrong impression of this product. First, you quoted Mary Hamway, a senior analyst at New Sciences, as saying that "Users don't need TRW or Andersen Consulting. . . . They can develop an application themselves." She told me her quote was taken out of context. Also, I was quoted as saying, "Our product is aimed at users, not developers." This is not true.

The Image Application WorkBench was designed for use by any developer of image applications. In the past, this type of development has been done by systems integrators like TRW and Andersen because the applications development process has required extensive, complex 4GL coding requiring the specialized knowledge typically found with systems integrators. The development cycle has also been long, costly and risky.

We believe the Image Application WorkBench is a major breakthrough that has the potential to reduce development costs and schedules by 60%. Also, it is a much easier tool to use and will improve communication between developers and users, thereby reducing development risks.

Naren Bakshi
President
Image Innovation
Orinda, Calif.

Flat wrong

Your headline "Copyright grip on source code weakened" [CW, June 29] was exactly wrong. Protection for source code is unchanged. It would have been more accurate to say "CA loses attempt to claim copyright protection for something that isn't in the source code." Or something like that.

Joshua Stern
Los Angeles

What about all the other wiretapping?

FBI Director William S. Sessions suggests the FBI's wiretap proposal isn't radical [CW, May 25]. I have investigated the FBI and other agencies' use of surveillance and interception techniques. According to the Administrative Office of the U.S. Courts and the Attorney General's Office, the number of interception orders approved by courts in this country is about 2,000 per year.

Sessions maintains that wiretapping is an investigative technique of the last resort. An analysis of the size of the industry that supports only 2,000 court-approved interceptions per year shows that limiting interceptions to legal actions would bankrupt the industry in short order.

The industry is obviously providing equipment for other uses. Why has Sessions not directed the FBI to investigate that? The manufacture of this equipment is closely regulated by law.

It would seem that the FBI's attempt to direct telephone technological innovation is an effort, though unintentional, to allow business as usual — e.g., interception of communications by numerous unauthorized individuals with unknown credentials and similarly unknown agendas.

Glen L. Roberts
Publisher, Full Disclosure
Libertyville, Ill.

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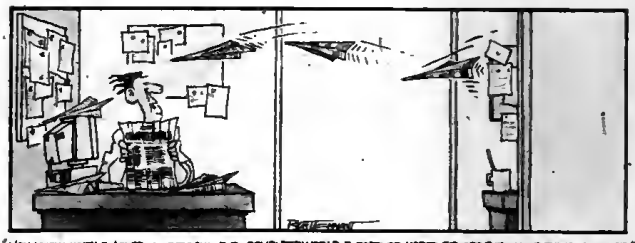

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We need policy follow-through

SEN. JEFF BINGAMAN

I believe the U.S. needs to adopt a conscious and aggressive technology policy.

Since the end of World War II the federal government has pursued a de facto technology policy that rests on two legs: support for basic science and "mission-oriented" technology development (largely cutting-edge defense technology). That breakthrough-oriented policy has worked well for many years, but it is no longer adequate because it ignores commercial follow-through.

Unless we adapt our traditional policy, we will continue to see foreign firms succeed at commercializing technologies invented in the U.S.

Changing world

Three fundamental changes have rendered our traditional, de facto technology policy obsolete. These changes suggest the direction in which an explicit technology policy must go.

The most important change has been the emergence of foreign firms that can refine breakthrough technologies developed elsewhere. Now, the greatest competitive advantage lies not with those who make the original discovery, but with those who perfect its manufacture.

A second change has been a decline in defense "spin-offs." Although military and space R&D spawned technologies such as computers, semiconductors and jet-propelled aircraft, defense R&D has been less effective at fostering commercial technology development in recent years.

Moreover, experts agree that the much larger and more dynamic commercial marketplace will increasingly drive both military and civilian technologies.

The third major change is that foreign rivals, having out-manufactured us using our own breakthrough technologies, are now increasingly developing their own. And, their investments in commercial technology now exceed ours.

Of the leading industrial countries, the U.S. alone fails to provide direct governmental support for commercial technology development.

The solution to our competitive problems, in my view, is not to divert resources from science and thereby risk losing our longstanding advantage. Instead, we must acknowledge the fundamental changes of the last 45 years and adapt our approach accordingly.

First, we should provide direct support for commercial technology development. That support should be cost-shared with industry, and it should focus on technology that is too risky for industry to undertake alone.

Second, we should give more attention to the diffusion and application of technology.

I'm calling for a national commitment of resources to state and local programs that provide manufacturing extension services to small and medium-size firms. We currently spend less than $100 million a year on manufacturing extension, compared with $1.3 billion on agricultural extension.

I'm also recommending federal support for activities by geographically clustered companies that enhance their ability to commercialize and apply technology.

The strength of regional technology clusters is fast becoming the key to international competitiveness. To borrow a phrase, to win globally, we must think locally.

All in one

Finally, we should integrate our civilian and military technology bases into a single national technology base. Here, one specific recommendation is to broaden the mission of the Pentagon's Defense Advanced Research Projects Agency to explicitly include support for technologies with both defense and commercial applications.

I believe strongly in markets: Industry can best judge market demand and bring commercial products to fruition.

The question for me is how to make the best use of the strengths of both government and industry.

The answer, in my view, is to seek ways to couple a larger fraction of the massive federal R&D enterprise to industrial efforts.

This does not imply government's "picking winners and losers." It does imply government's "making winners" out of technologies picked by industry.

Bingaman (D-N.M.) chairs the Senate Defense Industry and Technology Subcommittee.

Ignored, misunderstood, OS/2 deserves better

AXEL TILLMAN

No one seems willing to give IBM a fair chance these days. OS/2 is a great product, and I'm tired of reading page after page about new Windows 3.1 features and very little about OS/2 2.0.

I am not saying this because my firm has developed an OS/2 product. Our corporate strategy does not rely on OS/2, but I as a user and our guys from development hope OS/2 succeeds because it is the better platform.

Some writers claim the race will go to the company with the better marketing. I have to disagree. Everyone I've spoken to who has given OS/2 an objective tryout has been excited about it. But editorial impacts readers 10 times more than advertising, and no one is going to want to try OS/2 if publications consistently ignore or denigrate it.

It is hardly surprising, for example, that an operating environment would require less disk and memory space than a full-fledged operating system, but that distinction is seldom made by writers or reviewers. When Windows NT, which may really be an operating system, does appear, however, you can be sure that it will require more memory and more disk space than OS/2.

Right now, what I care about is fulfilling my technical requirements in a desktop environment. Beginning the day I installed OS/2 on my 25-MHz 386, I was extremely pleased at the speed with which I was able to accomplish goals I hadn't been able to reach after a year of painful experimentation with Windows.

Each task is a mouse click away. The number of system crashes is down to zero, from an average of five per day with Windows 3.0. I also don't have to boot my systems 10 times a day to access my network because OS/2 doesn't lock up the way Windows did when I tried to access network resources.

I'll admit that my particular hardware setup probably caused some of these problems. But the fact is that OS/2 2.0 solved them all, and I am now able to run multiple DOS, Windows and OS/2 applications combined with DOS-based network access simultaneously and still have my PC reacting to me.

Love at first look

I fell in love with OS/2's new graphical interface, the "Desktop." Once you get used to the handling, it's hard to imagine that there was ever another way of doing things. And it is important to understand that I am the sort of person who always said I liked to type at the prompt and know what I was doing. I never expected to warm to a graphical interface, and Windows really didn't convince me.

Just recently, I saw some lab-test results comparing OS/2 2.0 to Windows 3.1 and, although the testers tried to compare apples with oranges, OS/2 showed very good performance. Windows 3.1 didn't do all that much better on the application test than OS/2 simulating Windows did, and I suspect that if they had tried comparing performance on 1-2-3, using the OS/2 product from Lotus, the results would have been reversed.

The testers also didn't try four simultaneous DOS benchmarks under Windows vs. OS/2, which would have shown the real strength. This is like testing a Porsche against a Ford Fiesta at 55 mph.

OS/2 2.0 isn't the best that OS/2 can be. It should be considered a migration pass to purer OS/2 environments. In the meantime, however, the important thing is that it is real and delivers dependable performance.

Tillman is vice president of marketing at Trisystems, Inc. in Nashua, N.H.

Paying again and again for virus protection is enough to make you ill.

Frankly, paying anything at all is pretty nauseating.

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So you pay.

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But even that doesn't buy you much peace of mind. Because each new day brings an average of six new viruses into the world.

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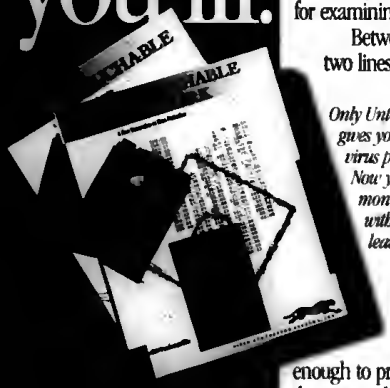


Only Untouchable Network gives you centralized virus protection. Now you can install, monitor and control without having to leave your seat.

If you find that statistic reassuring, then you probably like the odds in Russian Roulette.

If you don't, you'll want to know that Untouchable is equipped with a unique *third* line of defense, which has been mathematically proven to be, well, untouchable.

Instead of looking for viruses, this third line of defense looks for *changes in your executable and system files.*

If the change is but a single byte, Untouchable will spot it and, using our patent-pending recovery technique, reconstruct the file to its original state.

The process is known as Generic Differential Detection, and certain other programs claim to perform it, too.

But only Untouchable calculates file signatures using not one, but two proprietary algorithms that can't be reverse-engineered.

Only Untouchable guarantees 100% safe recovery of infected files. (Unlike other programs that proudly generate corrupted files, Untouchable knows when the jig is up and doesn't attempt recovery.)

Only Untouchable can provide centralized network virus protection. In fact, Untouchable Network has enough virus alerts and reporting mechanisms to settle the stomach of even the most nervous Netware® administrator.

And only Untouchable is backed by our vaunted 24-hour toll-free technical support and a one-year money-back guarantee.

If you're worried about viruses — and you should be — don't reach for the Maalox.® Reach for the phone. Dial 1-800-926-4289. Ext. 55.

You'll feel better right away.

FIFTH GENERATION SYSTEMS, INC

SAVE $50 Visit your dealer between now and August 31, 1992, and get Untouchable DOS for just $49 (sugg. list. $99)

MS-DOS is just fine for this support agency

BY ROSEMARY HAMILTON
CW STAFF

The information systems department at the Catholic Guardian Society of Brooklyn & Queens is not what you would call leading edge. But it is proving that it does not have to be to get the job done.

The society relies on a collection of Microsoft Corp. DOS-based applications and has no immediate plans to upgrade to a Windows environment, said Stan Capela, MIS director.

The Catholic Guardian, which will officially change its name to Heartshare Human Services of New York in September, was founded in 1914 to provide support services to orphans. Now funded with a mix of city, state and private support, it offers services including foster care, adoption and family crisis management as well as a set of educational and treatment programs for the developmentally disabled.

Capela oversees 10 staff members who generate reports, manage casework software and handle agencywide research. The Catholic Guardian's financial operation is handled by a separate group that uses an IBM Application System/400. Of the organization's $42 million operating budget, less than 1% goes to IS, according to Capela.

Capela's group uses Borland International, Inc.'a Quattro Pro to generate reports, Borland's dBase to maintain records and a few applications written by an independent firm. In addition, the group will be moving to a Novell, Inc. local-area network to support its 15 personal computers.

It is also evaluating Lotus Development Corp.'s Agenda, a DOS-based personal information management tool, to help case managers.

Recently, Capela's group has been polishing up a case management program written by Defrain Systems, Inc. in New York to support its family crisis prevention program. Defrain wrote the software in Clipper, a programming language for dBase that was developed by Nantucket Corp., which was recently acquired by Computer Associates International, Inc.

Defrain wrote Evolve, a similar case management system for Catholic Guardian'a foster care program, three years ago. It provides a tracking mechanism for children'a records, produces reports and handles the payroll for foster parents.

Both of these service programs were once managed by paper alone. Four years ago, Capela began using dBase to maintain data on foster children. While this was an improvement, the staff still needed an easier mechanism to produce reports and track information, Capela said.

Gets the job done

With Evolve, "the bottom line is I have increased report writing by 25% to 30% a year," he said. The system holds records on nearly 4,000 children with 1,050 active files today.

The organization'a IS effort began four years ago when a two-person quality assurance team was set up.

"We started off with three computers and now we are up to 15," Capela said. "We are talking about a department with very little background in computers."

Compaq bets on one-stop printer shopping

BY CAROL HILDEBRAND
CW STAFF

Compaq Computer Corp.'s new peripherals division may be a Johnny-come-lately to the printer market, but analysts are predicting that one thing it won't be is an also-ran.

The company'a distribution system and reputation for quality should help garner the division a piece of the printer market, which is currently dominated by Hewlett-Packard Co. on the desktop laser printer side, analysts said, pointing out that the company will probably follow the one-stop shopping method successfully employed by Apple Computer, Inc.

Although no specific products have yet been announced, Compaq said it will first target the network printing market.

One-stop shopping

"The key to the whole thing is, 'Can people buy a printer where they shop for PCs?' " said Mark Boer, a senior market analyst at BIS Strategic Decisions in Norwell, Mass. "It's unrealistic to think that everybody is going to stop buying other brands and start buying Compaq, but I think they will do very well."

Joel Wecksell, an analyst at Gartner Group, Inc., agreed, pointing out that Compaq'a dealer system, which he estimated, numbers about 4,000, is one of the strongest in the U.S.

> "IT'S UNREALISTIC TO think that everybody is going to stop buying other brands and start buying Compaq, but I think they will do very well."
>
> MARK BOER
> BIS STRATEGIC DECISIONS

As the company tries to entice users with the promise of one-stop shopping, it can also expand beyond its personal computer hardware base, a market of ever-eroding profit margins and ruthless competition. Boer observed that while a PC is more of a onetime purchase, printers generate steady income through the sales of supplies, such as toner.

First in line

Compaq's first effort will reportedly be a 17 page/min. network-ready printer, which jibes with the firm's strong reputation for networkable products. Said one Compaq user who has seen the printer: "It burns up the HP — if it comes in near it in cost, they'd make a dent" in the market.

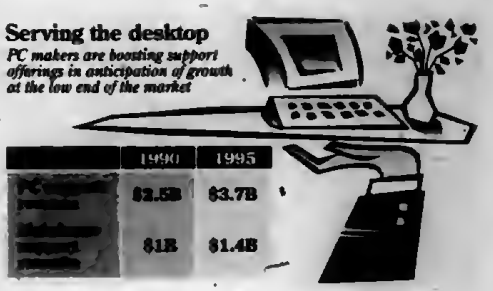
The one problem the user found was that the printer did not have a duplex option; that is, it could not print on both sides of the paper, an optional feature on the HP product.

However, Boer said that in the range that BIS designates as networkable printers — those that print between 12 and 19 page/min. — only about 8% of buyers want duplex printing. "While it's really neat from a paper-saving standpoint, not many printers can handle it," he said.

Senior writer Michael Fitzgerald contributed to this story.

Serving the desktop

PC makers are boosting support offerings in anticipation of growth at the low end of the market



	1990	1995
PC [illegible]	$2.5B	$3.7B
[illegible]	$1B	$1.4B

Source: Dataquest/Ledgeway Group

CW Chart: Stephanie Faucher

Dell makes support desktop difference

BY CAROL HILDEBRAND
CW STAFF

Tucked in with Dell Computer Corp.'s recent price cuts and entry-level personal computer introduction was a service and support initiative that analysts said signals another push for the corporate desktop.

The Austin, Texas-based company differentiated its lines — the low-end Dimension line and the traditional Dell line — by adding expanded service and support into the higher priced lines.

"There is a set of customers looking for basic hardware value and a set looking for total IS value equation. We split our hardware families along those lines," said Michael O'Dell, vice president of product development at Dell.

Wes Van Gerrick

Dell is moving *his firm away from a clone image in part through enhanced service*

Analysts said the move continues Chairman Michael Dell'a efforts to move his company away from a clone image and compete with the big boys — companies such as Compaq Computer Corp., IBM and AST Research, Inc.

"It'a really the only path that Dell can take at this point," said Scott Stein, an analyst at Technology Investment Strategies Corp. in Framingham, Mass. "Without getting creative with distribution, the only way to differentiate today is through a 'peace of mind' guarantee."

However, Stein noted that Dell will have a tough time keeping up with its competitors now that they have slashed the bottoms out of their prices. "Their support effort has to be good, particularly in light of a resurgent Compaq," he noted.

For the difference in price between a Dell and a Dimension — about $250 for a 33-MHz Intel Corp. 80386-based PC — users can get the following new services if they decide to buy:

- **Guaranteed compatibility.** If a Dell system has a compatibility problem within three years of purchase, a customer is entitled to Dell'a help in solving the problem. Failure to fix the glitch will result in a refund.
- **Guaranteed response.** Dell is promising to provide technical support within five minutes of calling the company's support line (operated from 6 a.m. to midnight). Those not willing to wait the five minutes will get a call back within the hour. If not, Dell will pay the user $25.
- **Guaranteed service.** Holders of Dell service contracts now have access to next-business-day replacement of desktops and notebooks.

Dimension users get 24-hour technical help via fax, access to the company's toll-free automated technical support, a year'a worth of help from an expert help hotline and a 30-day money-back guarantee.

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Z series.

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is built in.

The *Z* series of desktop and notebook PCs and servers is a whole new way of thinking. It views PCs as a long-term investment, and has the vision to protect it. It's called Thinking Ahead.

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intel inside

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A Bull Company

Thinking Ahead

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How to deal with two Novell problems

WINDOWS POINTERS

Part of a series of Windows 3.1 user tips provided by Microsoft Corp. and based on questions commonly asked of Microsoft customer support personnel.

Q Why doesn't my Novell, Inc. NWPOPUP.EXE messaging utility initialize properly? When I exit Windows I get all my messages.

A If you are running Windows in 386 enhanced mode and a version of Novell NetWare's NWPOPUP.EXE with a file date earlier than March 10, 1992 is in your Windows directory, or if NWPOPUP.EXE is located in a directory prior to the Windows directory entry in the PATH= statement, then NWPOPUP.EXE will get loaded and will not initialize properly under Windows 3.1. It may also be necessary to try placing the following line in the [386Enh] section of your SYSTEM.INI file: **TimerCriticalSection=10000**

This increases the amount of time before the critical section is timed out.

Q I am the system administrator for a Novell network. Most of my workstations run with no problem, but two of my workstations run only in standard mode and not in 386 enhanced mode. If I do not log on to the network, then I can run in 386 enhanced mode.

A There are four possible causes for the problem: 1) incorrect network software drivers, 2) IRQ conflict, 3) random-access memory address conflict or 4) base address conflict.

1) Read the NETWORKS.WRI file for the steps necessary to upgrade your current versions of IPX and NETX. If needed, contact your network card manufacturer if you need new low-level drivers.

2) Most machines do not support two devices using the same IRQ at the same time. This means that if you are using your network card on IRQ3 or IRQ4, then you will have to either disable COM2 or COM1, which use the same respective TRQ, or reconfigure the network card for a free IRQ. On most machines, IRQ5 and IRQ2 are free, meaning no other hardware device is attempting to use them.

3) Many network cards use a RAM address in the Upper Memory area between 640K and 1,024K bytes. If your card is using this range, then exclude use of this range with EMM386.EXE or an EMMEXCLUDE statement in the SYSTEM.INI file'a [386Enh] section. Some cards will not function properly at D000 and need to be reconfigured for D800.

4) Many hardware devices have base memory addresses (e.g., COM ports). There may be a conflict with an existing device. Try reconfiguring the network card for an address of 300h or greater.

User group offers .INI editing relief

BY CHRISTOPHER LINDQUIST
CW STAFF

The Windows Users Group Network (Wugnet), based in Media, Pa., recently unveiled a Windows configuration management tool designed to eliminate the need to manually edit a variety of .INI configuration files — and to drum up some membership in the group.

Windows System Engineer provides point-and-click access to the wide variety of parameters — including some not documented in Microsoft Corp.'s literature — involved in fine-tuning Windows to a particular environment. Among the available parameters are those dealing with memory, keyboard interface, networks, communications and disk operations.

Users click on check boxes and spin buttons to select features and settings, allowing a try-as-you-go approach to configuring Windows. System Engineer also keeps a log of all changes and allows users to keep multiple configurations and revert back to previous settings for any reason and at any time.

"System Engineer works well as a tool to explore and tweak performance settings, etc., of the Windows environment," said David Howell, information systems manager at PED Manufacturing. He used System Engineer to quickly edit his SYSTEM.INI and WIN.INI configuration files.

However, "it probably goes a bit further than most folks need," Howell added. "Still, for power users, it's a handy tool."

System Engineer also includes detailed technical help concerning both its own operation and the operation of many technical aspects of Windows configuration.

"Balloon help" is also available on any parameter. Clicking on a parameter with the right mouse button calls up an information box about its configuration options.

System Engineer is available with a Wugnet membership. Full membership fees start at $99 per year for individuals and $495 for corporations.

Announcing the development of a spatial database system for those who know what one is.

Ingres, a leading relational database company, and ESL, a leading developer of advanced imagery systems and GIS applications, are pleased to announce that spatial database management capabilities are being added to the Ingres Intelligent Database. Spatial database management capabilities, including new data types, operators, and access methods, will be embedded in the Object Management Extension of the database. This development is expected to open up a $25 billion market in GIS alone. For more information, call 1-800-4-INGRES.

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Ingres

Handheld device market taking shape

BY MICHAEL FITZGERALD
CW STAFF

SANTA CLARA, Calif. — Vendors hope that small packages can yield good things. At least two impending chip moves may lend shape to the market for handheld devices.

AT&T's Microelectronics Division and Go Corp. used Mobile92, a recent Technologic Partners conference on mobile devices, to announce AT&T's reduced instruction set computing (RISC) chip, called Hobbit, which runs a RISC-specific version of Go's PenPoint operating system (see story bottom right).

Analysts said Hobbit will lead to cheaper, faster handheld devices that will be used like cellular phones.

"I think they're looking at personal communications devices more than anything else," said William Lempesis, president of Lempesis Research in Pleasanton, Calif.

Let's make a deal

In addition, Intel Corp. recently announced a deal with VLSI Technology, Inc. that will give handheld or subnotebook computer builders the opportunity to have custom processors.

Intel spent $50 million to buy less than 20% of VLSI, a chip set maker based in San Jose, Calif. The two companies expect to build integrated 80386 processors targeted at the palmtop and subnotebook markets, focusing on semicustom versions to meet specific vendor requests.

The deal gives VLSI a license to the core of Intel's 3.3V 80386SL power management microprocessor. Intel, meanwhile, will serve as the chip foundry for VLSI's designs.

Intel said it has no plans to create semicustom versions of other processors.

While many observers have said handheld devices will likely be consumer-oriented, Michael Aymar, vice president of the entry-level products group at Intel, said the company thinks products based on its chips — the first version of which will appear in mid-1993 — will be used by businesses before they reach the consumer channel.

Why the move?

Analysts said Intel's move was prompted by a desire to appear responsive to customers in the face of Cyrix Corp.'s recent agreement to license its Intel-mimicking processors to Texas Instruments, Inc. They also pointed to competition for the handheld market from the new Hobbit chip and companies such as Chips and Technologies, Inc.

At least one analyst said the Intel initiative will badly damage the effort by Phoenix Technologies Ltd. and Lotus Development Corp. to create "companion" personal computers based on Chips and Technologies' chips [CW, May 4].

"This puts people like [Phoenix/Lotus] reference design out of business," said Andrew M. Seybold, editor of "The Outlook on Professional Computing," a newsletter published in Brookdale, Calif. "If I'm a vendor and I can specify a design and get Intel and VLSI to build it for me and it's in a chip that I own, then I can maybe get my prices up."

Hopes for Hobbit

A potential market of 1 billion units drew AT&T into the market for handheld communicators.

"We know it's going to be a very big market, perhaps a billion users by the end of the decade," said Rakesh Sood, marketing director at AT&T's Personal Communications Systems Division. Besides the new division, AT&T last week announced Hobbit, a RISC processor; and its plan to use a version of Go's PenPoint operating system optimized for RISC chips.

Sood and S. Jerrold Kaplan, Foster City, Calif.-based Go's founder and chairman, said the two companies had worked on this project for more than a year. Sood said there will be a reference design set consisting of the new PenPoint and the Hobbit chip in November.

Kaplan said he expects products in the $500 to $1,500 price range based on the reference set to hit the market early next year.

The dual announcement will benefit both companies, according to analysts.

"Hobbit is worthless without an operating system, and Go gets to show it's committed to scalable systems when there is a question of whether Microsoft's Windows for Pen Computing is truly scalable," said Tim Bajarin, executive vice president at Creative Strategies Research International, Inc. in Santa Clara, Calif.

MICHAEL FITZGERALD

Announcing the development of a spatial database system for those who don't.

Imagine a big shoe box in which you can store about, oh, two trillion pieces of information.

That is a spatial database.

Into it go bits of information like the entire population of the earth by height, weight, and age. Or the moon, mapped square inch by square inch. Or every cell in the human body. Little things like that.

But unlike the shoebox you have now, where you keep your old receipts, and can't find anything, the spatial database lets you retrieve all the information put into it. In any combination you want. In any form you want. At any time you want.

All two trillion bits of it.

And the retrieval we're talking about is not like the retrieval from any ordinary database.

A spatial database allows you to retrieve and arrange data on "multidimensions." Which means that the bits of data you put into the database can all be related to one another. No matter how deep the layers of data get. No matter how long ago you put the data into the database.

All you do is simply tell the spatial database to compare this with that with this with that with this with that.

What's more, a spatial database allows you to create and store three-dimensional shapes, like the shape of a mountain you've just mapped.

All of which, while interesting, may beg the question: So what?

To answer, consider another large number associated with the spatial database: Twenty-five billion dollars.

That is the conservative estimate for what will happen to just one piece of the total market for the spatial database. That $25 billion piece is called Geographic Information Systems. Or GIS, for short.

The people who make up the GIS market do such things as map and collect geographic reference points for further analysis. Mapping Venus is a GIS job. So is mapping Los Angeles. And so is mapping weather systems.

And what can be done with all those "geographic reference points"?

You can unclog city traffic, for one thing. Or find the quickest routes for emergency vehicles. Or monitor trends in high-crime areas. Or select the best sites for retail bank branches.

The list is endless.

And so are the markets for spatial databases. GIS. Finance. Engineering. Any business that uses large amounts of data and needs to arrange, relate, and access them quickly and simply.

All you need are the right applications. And, of course, the spatial database that can handle all those "reference points."

Why Ingres and ESL?

Ingres is the only company that makes relational databases designed right from the start to accommodate a spatial database. And Ingres is the only company with the experience to make a spatial database practical for real-world companies, not just research laboratories.

ESL, on the other hand, specializes in creating effective applications for the GIS market.

Soon, this unique team will bring their efforts to market.

Which should give you a head start on asking questions about spatial databases and how they can help your company.

Now that you know what one is.

For more information, call 1-800-4-INGRES.

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B O R L

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Borland C++ is the choice of professional C *and* C++ programmers for Windows *and* DOS application development. The third-generation C++ compiler fully supports the AT&T CFRONT 3.0 standard C++, including templates! And the powerful C compiler fully implements the ANSI C standard. With both compilers included you can program in C today and move to C++ when you're ready.

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A host of powerful features in one package!

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New! Color-coded syntax highlighting makes your code more readable and helps you spot errors.

The **EasyWin™ Library** converts standard DOS applications to Windows just by recompiling. The **SpeedBar™** makes Windows development astonishingly intuitive and fast, employing recognizable icons to represent your frequently used menu items.

Resource Workshop allows you to visually create your Windows user interface without programming.

New! UAE tracer helps trace Windows errors.

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A N D

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"Borland C++ is clearly the superior Windows development system; it is without doubt the most comprehensive language package we have ever seen."
—*InfoWorld, February 3, 1992*

Free CASE tool worth $495

The Protogen CASE tool speeds development by letting you visually design Windows user interfaces and generate code.

When you buy Borland C++ now ($495 suggested retail price) or Borland C++ & Application Frameworks ($749 suggested retail price), you get a Protogen code generator *free*!

If you're serious about moving to C++, go with the leader: Borland.

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1-800-331-0877

In Canada, call 1-800-461-3327

Turbo Debugger® gives you intelligent, interactive debugging on a single monitor. The **Turbo Profiler**™ helps you spot bottlenecks in your code to streamline your applications performance. With the object-oriented **Turbo Assembler®** you can integrate your assembly language code into your applications quickly and easily.

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The **ObjectWindows**™ application framework streamlines Windows development. It automates initialization and gives your applications more functionality with less code. ObjectWindows also features Borland Custom Controls that make your applications look great.

Also included is **Turbo Vision**,™ the application framework for DOS that gives you capabilities similar to ObjectWindows for character-based programs. Both come with full source code.

The critics' choice

"Borland C++ looks set to become the *de facto* development environment for Windows programmers."
—*Program Now*, December 1991

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B O R L A N D

NEW PRODUCTS

Software applications packages

ZSoft Corp. has announced PC Paintbrush 5+, a color and gray-scale image editor.

PC Paintbrush 5+ creates, scans and edits images used in desktop publishing and presentation applications. This upgrade includes new filters and a stitching feature that allows separately scanned sections of an image to be pasted together. Segments of an image can appear farther away or closer than other segments with a Perspective feature, and a Magic Wand tool can automatically select areas of similar colors.

PC Paintbrush 5+ provides special text effects, including size and style control, gradient options, shadowing, kerning and leading.

PC Paintbrush 5+ costs $149.

ZSoft
Suite 100
450 Franklin Road
Marietta, Ga. 30067
(404) 428-0008

Theos Software Corp. has introduced the Theo+Grafx Multi VGA Adapter Kit.

The product allows multiple Video Graphics Array monitors to be attached to one 386/486 host personal computer. Users can run standard DOS graphical programs such as Microsoft Corp.'s Windows and Aldus Corp.'s PageMaker in multiuser mode on remote bit-mapped monitors.

Working in conjunction with the Theos multiuser DOS environment, Theo+DOS, users can produce DOS-based workgroup systems for about half the price of local-area networks, the company reported.

The VGA adapter kit costs $1,895.

Theos Software
Suite 360
1777 Botelho Drive
Walnut Creek, Calif. 94595
(510) 935-1118

Iges Data Analysis, Inc. has announced IgesView Version 3.0.

IgesView displays computer-aided design and manufacturing (CAD/CAM) data without requiring access to a CAD system. Users can manipulate, mark up, integrate and validate CAD/CAM engineering and design data and convert CAD graphics to a number of electronic publishing systems. New to this version are entity selection and engineering markup/red-lining capabilities.

Other features include a window to modify and summarize the visibility and color of each Iges entity and quick access to the manipulation features of IgesView via the main window.

Prices start at $1,995 for a single floating license.

Iges Data Analysis
2001 N. Janice Ave.
Melrose Park, Ill. 60160
(708) 449-3430

Fax

Optus Software has released FacSys Version 3.3, a fax solution for Novell, Inc. NetWare local-area networks.

FacSys supports multiple fax servers for users with multiple file servers and high fax volume. To avoid bottlenecks, FacSys will automatically allocate fax jobs to the fax server with the lightest active load. A new Microsoft Corp. Windows printer driver pops up automatically when fax transmission is selected.

Other features in this release include a QuickSend feature that allows users to send just the cover page using the built-in word processor, simplified transmission of multiple files and support for Class II devices.

FacSys costs $995 per file server.

Optus Software
100 Davidson Ave.
Somerset, N.J. 08873
(908) 271-9568

Peripherals

Wintek Corp. has released Power I/O Module interface cards.

The interface cards were designed to be used with the Wintek controller chassis and personal computer, IBM PC AT and Extended Industry Standard Architecture (EISA) computer systems. A printed circuit card plugs into the appropriate style expansion slot and lets users cable directly to industry-standard digital I/O racks. The racks can be used for either data acquisition or control applications and typically provide 8, 16 or 24 channels of digital I/O capability.

The Power I/O Module for PC/AT/EISA computers costs $159, and the Power I/O module for the Wintek controller chassis costs $125.

Wintek
1801 South St.
Lafayette, Ind. 47904
(317) 448-1903

Patton Electronics Co. has introduced Patton Model 2015.

Patton Model 2015 is a passive interface converter that allows an asynchronous RS-449 device to communicate with a synchronous V 3.5 device. It is protocol-independent and can support communication distances of 4,000 ft.

Patton Model 2015 comes in two versions that cost $119 each.

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BUYERS' SCORECARD

C++, Smalltalk vie for object-oriented favor

BY DEREK SLATER
CW STAFF

Applications developers seeking to catch the wave and move to object-oriented programming (OOP) face an expanding number of options.

C++ is one of the most popular choices. Detractors say C++ is not a pure object-oriented language but rather a set of object-oriented extensions pasted over conventional C language; however, proponents argue that this fact makes C++ easier for C programmers to learn than other OOP languages.

Smalltalk and Lisp are pure OOP languages offered by many vendors. The OOP product gamut also includes a number of proprietary development environments such as The Whitewater Group's Actor (recently purchased by Symantec Corp.); Object/1 from Micro Data Base Systems, Inc.; and Energize Programming System from Lucid, Inc.

In a poll of C++ and Smalltalk users, ParcPlace Systems, Inc.'s Objectworks/Smalltalk compiler and development environment distinguished itself with the top overall score of 79. Its competitors finished close behind: Microsoft Corp.'s C/C++ scored 77, Digitalk, Inc.'s Smalltalk/V earned a 76, and Borland International, Inc.'s C++ scored 75.

The results demonstrated some of the relative strengths of these two approaches to OOP. In general, users gave the two Smalltalk products higher satisfaction ratings in areas such as support for inheritance and ease of maintaining applications. The C++ environments scored noticeably higher in speed of applications.

Buyers' Scorecard measures users' satisfaction with their installed technologies. See the methodology on the following page for a detailed description of the scoring process.

The two Smalltalk alternatives offer a range of functionality and price. Both products were upgraded recently.

ParcPlace announced Objectworks/Smalltalk Release 4.1 on June 2. The Objectworks/Smalltalk environment is priced at $3,500 per user — by far the most expensive product in the survey. It outscored the competition by a notable margin in portability of applications (8.9, compared to Microsoft C/C++'s second-place 8.0). Objectworks also scored highest in quality of vendor support.

Objectworks runs on several platforms, including personal computers, Apple Computer, Inc. Macintoshes and a variety of Unix workstations. A number of new add-on tools and utilities are available, such as the Objectworks/Smalltalk C Programming utility.

Digitalk's Smalltalk/V for Windows was also upgraded in early June. It now includes an icon bar for common functions, support for Windows' Multiple Document Interface and new tools for monitoring the status of development tasks. Digitalk's product topped ParcPlace's in areas including reusability of code for other applications. Smalltalk/V is also less expensive than Objectworks, carrying a $499.95 price tag for Version 2.0. In addition to Windows, Smalltalk/V supports OS/2, DOS and the Macintosh platform.

Microsoft's C/C++ compiler is relatively new, with the product's object-oriented C++ extensions added to its C language compiler in Release 7.0 ($499). Users rated it above Borland's C++ compiler in several areas, including quality of support and documentation.

Borland's C++ has been available for several years and holds the lion's share of the OOP compiler market. The newly released Version 3.1 is priced at $495. Its highest score came in the area of compiler performance.

More than 70% of the users surveyed indicated that using OOP has increased their productivity. ■

Object-oriented programming software

Total scores reflect average user ratings for all measured areas, weighted by user-assigned importance. Response base: ParcPlace, 18; Digitalk, 32; Microsoft, 23; Borland, 37.

Total possible score **100** Mean score **77**

Product	Highest ratings	Lowest ratings
ParcPlace's Objectworks/Smalltalk (SCORE 79)	Portability of applications	Training time required
	Support for inheritance	Speed of applications
	Reusability of code	Ease of maintaining applications
Microsoft's C/C++ (SCORE 77)	Documentation	Training time required
	Availability of class libraries	Compiler performance
	Quality of vendor support	Browser support
Digitalk's Smalltalk/V (SCORE 76)	Reusability of code	Training time required
	Debugging features	Documentation
	Support for inheritance	Speed of applications
Borland's C++ (SCORE 75)	Speed of applications	Training time required
	Integration of tools and functions	Browser support
	Debugging features	Portability of applications

RATINGS IN ORDER OF IMPORTANCE

Each of the six most important categories is topped by a Smalltalk product.
Users indicated that ease of maintaining applications is the most important evaluation area.

User importance rating

(Detailed ratings on next page)

8.6 Ease of maintaining applications

Digitalk	8.0
Microsoft	7.7
Borland	7.6
ParcPlace	7.5

8.4 Debugging features

ParcPlace	8.6
Digitalk	8.4
Microsoft	8.0
Borland	7.9

8.3 Integration of tools and functions within environment

ParcPlace	8.4
Digitalk	8.3
Borland	7.9
Microsoft	7.6

8.3 Reusability of code for other applications

Digitalk	8.5
ParcPlace	8.3
Microsoft	7.9
Borland	7.3

8.2 Quality of vendor support

ParcPlace	8.1
Microsoft	7.8
Borland	7.0
Digitalk	6.8

7.9 Responsiveness of vendor service

ParcPlace	8.0
Microsoft	7.8
Borland	7.2
Digitalk	6.9

RATINGS IN ORDER OF IMPORTANCE

(Object-oriented programming software, continued from previous page)

Microsoft's and Borland's packages top the areas of documention and speed of applications. ParcPlace Systems' product earns a noteworthy score in portability of applications.

7.9 Documentation

Microsoft	8.6
Borland	7.6
ParcPlace	6.9
Digitalk	6.4

7.9 Support for inheritance

ParcPlace	8.7
Digitalk	8.6
Borland	7.6
Microsoft	7.3

7.7 Speed of applications

Borland	8.0
Microsoft	7.7
ParcPlace	7.1
Digitalk	6.7

7.6 Compiler performance

ParcPlace	8.4
Borland	8.1
Digitalk	7.9
Microsoft	7.3

7.6 Browser support

ParcPlace	8.3
Digitalk	8.2
Microsoft	7.1
Borland	6.7

7.5 Availability of class libraries

ParcPlace	8.2
Microsoft	8.0
Digitalk	7.7
Borland	7.2

7.3 Portability of applications

ParcPlace	8.9
Microsoft	8.0
Borland	6.8
Digitalk	6.8

7.1 Training time required

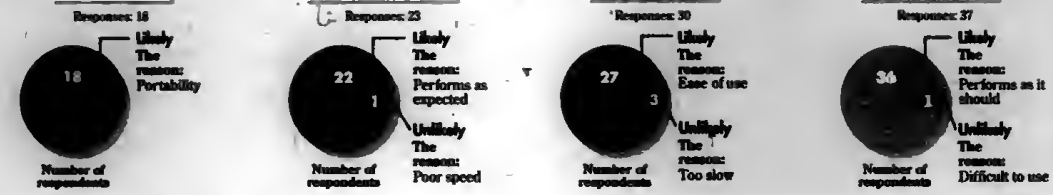
Borland	6.4
Digitalk	6.0
Microsoft	6.0
ParcPlace	5.3

7.1 Support for runtime and compile time delegation

Microsoft	7.8
Digitalk	7.5
Borland	7.3
ParcPlace	6.5

Loyalties

Would you buy the product again?
(Reasons are based on the most frequently stated responses.)



Verbatim

What do you like best/least about this product?
(Responses are based on the most frequently stated answers. Quotes are selected from users' responses.)

ParcPlace

Likes
Portability
"We can switch our applications to a new platform very easily."

Dislikes
Compatibility
"Smalltalk is its own little world."

Microsoft

Likes
Ease of use
"It's fairly easy for C programmers to learn the extensions."

Dislikes
Speed
"It's too slow."

Digitalk

Likes
Ease of use
"It can put together a quick and easy application."

Dislikes
Speed
"We'd like to see them improve the speed of the program."

Borland

Likes
Integration of environment and tools
"It's a very mature product in terms of integration of all the functions."

Dislikes
Compatibility
"The lack of network compatibility is a problem."

Vital statistics

Total number of respondents: 110

What is your position?

IS director	6
IS manager	6
Project manager	7
Applications development manager	8
Programmer/Other	83

How long have you been involved with OOP?

Less than one year	8
1-2 years	37
3-4 years	28
Five or more years	35
Don't know	2

What is your responsibility for OOP software?

Evaluate or recommend vendors	102
Determine need	101
Select vendors	96
Set standards for organization	95

Roughly what percentage of your object-oriented code has been reusable?

0-25%	32
26-50%	36
51-80%	24
More than 80%	8
Don't know	10

METHODOLOGY

The C++ compilers selected for this Buyers' Scorecard are from the programming language market share leaders. The Smalltalk packages are the leading products in that segment of the languages market.

User names were obtained from a combination of vendor and nonvendor sources. First Market Research, an independent data collection company in Austin, Texas, conducted the survey and tabulated the results.

The response base was 37 users for Borland International, Inc.'s C++, 23 for Microsoft Corp.'s C/C++, 18 for ParcPlace Systems, Inc.'s Objectworks/Smalltalk and 32 for Digitalk, Inc.'s Smalltalk/V.

Users assigned 1-to-10 ratings based on their satisfaction with their object-oriented programming software packages in 15 specific categories. The users also rated the importance of each category.

To compute the overall score for each product, we performed the following steps:

1) Multiply the product's score in the first category by the user importance rating for that category to obtain the weighted score.

2) Repeat the process for all remaining categories.

3) Average the resulting figures for the average weighted score.

4) Convert the average weighted score to base 100; the ratio of the average weighted score to the average user importance is equal to the ratio of the overall score to 10. Numbers were rounded off where necessary.

ACKNOWLEDGMENTS

Computerworld thanks the following individual and firm for their assistance in preparing this Buyers' Scorecard: Byron Hale, Effective Information; *Computerworld* Database Division.

Don't put your eggs in one LAN basket, research study advises

BY MICHELE DOSTERT
CW STAFF

When corporate information systems departments try to integrate department local-area networks into their enterprisewide computing environment, they often find themselves supporting multiple LAN operating systems.

That is not necessarily bad, according to a recent report by Technology Investment Strategies Corp. (TISC), a Framingham, Mass.-based market research firm. Contrary to the belief that single operating system strategies make life simpler, the report said, a certain amount of chaos leaves corporate options open wider.

Too soon to call

"Tactically, forcing these departments to change to a technology that may not work as well for them is going to be unpopular," said Mark Leary, director of communications and network research at TISC and the author of the report. "Strategically, the LAN industry and the NOSs are changing so rapidly that it's too early to lock in to any one technology."

According to Leary, future operating system compliance with network standards such as the Open Software Foundation's Distributed Computing Environment will enable users to mix and match without sacrificing interoperability among different systems. That should minimize the risk buyers currently face of locking themselves into proprietary technology that may not meet their future needs.

"In two to three years, the dust should settle in the desktop operating system wars, and it will be clearer how network services should be integrated into the desktop," Leary said. "To bet the farm on one NOS now would be premature."

IS managers should concentrate on learning how to manage distributed LANs from a centralized location and building trust in their ability to support LANs in user departments, Leary added.

Craig Goldman, chief information officer at The Chase Manhattan Bank NA, agreed that it is still too early to pick standards. "For now, in terms of our future platform, we are not making any decisions," Goldman said. "I think that anyone who doesn't need to choose absolutely right now would be well-advised to sit tight and not make any mistakes."

The TISC report recommended Novell, Inc.'s NetWare as the best network operating system available for firms committed to a single-system strategy. Large companies, however, should feel comfortable with the least-risk route — the multiple operating system strategy.

Unifying the law of the LAN

Bay Area firm begins to integrate offices

BY MICHAEL FITZGERALD
CW STAFF

SAN FRANCISCO — The San Francisco Bay is merely steps away from Jon Holman's office, but he has not had much time to sit on the dock and whistle since joining the law firm of Brobeck, Phleger & Harrison three years ago.

The former Andersen Consulting consultant has been busy unifying a loosely connected jumble of local-area networks in the firm's five offices.

"Administratively, it was a real nightmare," Holman said. "We probably had seven different versions of NetWare floating around."

No place like home

The San Francisco office alone had 13 or 14 file servers in place, each handling 40 to 50 users. However, because the firm had installed technology on an ad hoc basis, the system in the home office was different from those in the firm's other California offices in Los Angeles, Palo Alto, San Diego and Newport Beach — as well as different from the firm's back-office systems.

Los Angeles, for example, used a Digital Equipment Corp. VAX for its computing needs.

"Our goal was to make it so that somebody could go to any office in the firm and have the same environment — the same phone system, the same on-screen menus, etc.," said Holman, who is director of technology at the $150 million firm.

When Brobeck, Phleger made the decision to create a "one-firm firm," as Holman called the network unity scheme, the Los Angeles office began the migration, moving from the VAX to a NetFrame Systems, Inc. NetFrame 400 superserver 18 months ago.

Continued on page 47

Jon Holman

Andy Freeberg

Brobeck, Phleger & Harrison
San Francisco

- **Challenge:** To build a unified IS environment to save administrative costs.
- **Strategy:** Consolidate 25 file servers into six superservers from NetFrame Systems. Focus on CASE-based application design.
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Unifying the law of the LAN

CONTINUED FROM PAGE 45

Holman said the decision to buy a NetFrame was not made lightly. "We had looked very closely at [Compaq Computer Corp.'s] SystemPro," he said. "We basically concluded the SystemPro was a souped-up PC, and the NetFrame was aimed at a different market."

He also cited upgrade costs for Novell, Inc.'s NetWare as a factor in the decision to move from multiple servers to the NetFrames. "When we priced all that out, the savings that we realized from only having to buy three to four copies vs. 13 to 15, we actually were able to almost pay for the cost of the NetFrames," Holman said.

Declines in licensing costs for packages such as Lotus Development Corp.'s CC:Mail, as well as reduced administrative burdens, contributed to the decision.

No rest for the weary

And then there was the superservers' reliability. "Our LAN environment is mission-critical to us — we are close to a 24-hour shop," Holman said.

Brobeck, Phleger now runs its back-office operations on an IBM Application System/400 and its front-office applications on NetWare 3.11 running on NetFrame 100- and 400-class machines. The firm also has a NetFrame 450 for use as a test machine. The two systems are connected directly via Ethernet with routers from Cisco Systems, Inc.

More than 1,100 Brobeck, Phleger employees use the systems, including more than 80% of the firm's attorneys.

The changeover went fairly smoothly, with the only limitations being those imposed by the NetWare 3.11 software. "It only supports 250 connections, and at that level we're not approaching capacity on these machines," he said.

Though his initial goal has been accomplished, Holman still has plenty to do. Brobeck, Phleger has aimed to replace at least half of its 80286-based PCs with systems of 386SX- or higher class products. It is also weighing a decision whether to move to Microsoft Corp.'s Windows environment while keeping a close eye on declining prices of optical disc technology. It already uses some 20G bytes of storage to handle its records.

Brobeck, Phleger is in the midst of building new financial systems, including a new client accounting system, using Lansa, a computer-aided software engineering tool from Australia's Aspect Computing Pty. Ltd.

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Ram Mobile Data forms E-mail unit

BY ELLIS BOOKER
CW STAFF

NEW YORK — Taking to heart forecasts that electronic messaging will be the "killer app" behind the growth of wide-area wireless networking, Ram Mobile Data last week formed a new business unit.

The Wireless Messaging Business Unit will offer wireless connectivity services, starting with a suite of tools designed to enable those who write applications or provide electronic-mail services to add Ram wireless connectivity to their products and services, said company Vice President Martin Levetin, who will serve as general manager of the new business unit.

Plan in the works

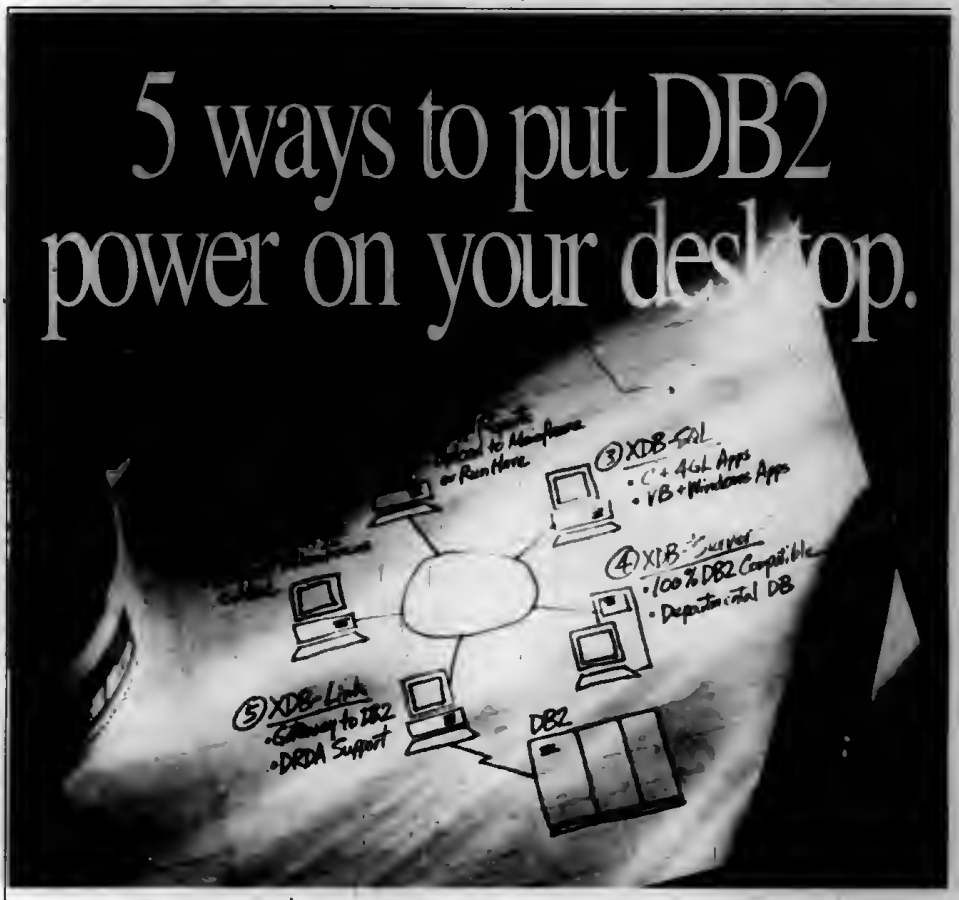
Just three weeks ago, in fact, Ram Mobile Data and AT&T EasyLink announced plans to develop a wireless option sometime next year for users of the AT&T E-mail service.

The emphasis on E-mail and wireless E-mail is warranted, according to Ram Mobile Data, given industry growth projections.

The Electronic-Mail Association is predicting that the number of E-mail users will triple to 27 million during the next three years.

"There's a tremendous tumult in the market right now, with a lot of opportunity," said Robert Rosenberg, president of Insight Research Corp. in Livingston, N.J. "Everyone realizes that most of the communication services that are carried on the wires today could be provided over these [wireless] networks."

New York-based Ram Mobile Data is a business venture between Ram Broadcasting Corp. and BellSouth Corp.



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Swiss stock consortium banks on Sun

Group to use SPARC platform for software development as it automates trading system

BY GARY H. ANTHES
CW STAFF

A consortium of Swiss stock exchanges has chosen Sun Microsystems, Inc. to supply the development platforms for an electronic exchange for the 21st century.

The consortium, Association Tripartite Bourses (ATB), will replace manual trading systems at exchanges based in Geneva, Zurich and Basel, Switzerland, with an automated trading system accessible by member banks, brokerages and other financial entities. ATB will work with the Swiss Options and Financial Futures Exchanges — a private company spun off from ATB — on the project. Completion by the end of 1994 is the goal, at a cost of $55 million.

While hardware for the production system has not been chosen, Bernard Fuchs, a spokesman for ATB, said Sun SPARCstations and SPARCservers were chosen for software development in part because of their adherence to open system standards. The resulting applications must be portable and must be able to interface with whatever systems are in place at member institutions, he said.

Fuchs said Sun was also chosen for its new Solaris 2.0 operating environment, which includes Unix System V, Release 4, plus features for multithreading, symmetric multiprocessing, network security and real-time processing.

The three exchanges, which now operate independently, will be merged and replaced by the single, electronic exchange, Fuchs said.

In addition, the new system will encompass both equities and futures trading — previously separate — according to Serge Dugas, financial services marketing manager at Sun Microsystems Computer Corp., the hardware subsidiary of Sun that has provided networked workstations and servers to exchanges in the U.S., Japan and Europe.

Fuchs said the trading system will initially be used by some 65 Swiss banks and may later be made available to other financial institutions. The applications, to be written in the C language, will provide decentralized trade-order entry and market data display as well as centralized order administration and execution. Data provided to members will be updated in real time as trading occurs.

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DU100	Datapath Sw. Digital	64 Kbps	2-wire Sw. Digital	All Rates
DU170	Datapath Sw. Digital	64 Kbps	2-wire Sw. Digital	Keypad, Autodialer
TA120	Terminal Adapter	2 Ch. @ 64K 1 Ch. @ 16K	ISDN	Supports Voice & Data
TA/DL	Terminal Adapter	1 Ch. @ 64K 1 Ch. @ 16K	ISDN	X.25 PAD, Soft Upgrade
TA220	Terminal Adapter	2 Ch. @ 64K 1 Ch. @ 16K	ISDN	Combines "B" Channels
D56	DSU/CSU	56 Kbps	DDS	Low Cost 56K Sync.
DDS/MR1	DSU/CSU	56 Kbps	DDS	All DDS Rates
DDS/MR2	DSU/CSU	56 Kbps	DDS	DDS with Sec. Channel
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IN BRIEF

Preferred tool eases upgrades to NetWare

■ For users seeking automated tools to ease Novell, Inc. NetWare operating system upgrades, **Preferred Systems, Inc.** in Trumbull, Conn., last week announced PSI:Origen 2.0. The software, aimed at filling gaps created when people are not available to make upgrades, reportedly reads information from file servers into Origen's database management system; makes enterprise changes to users, groups, directory structures and other local-area network parameters; and creates and distributes new user passwords. The software costs $495 for the first server and $295 for subsequent servers.

■ Arcnet LAN pioneer **Datapoint Corp.** in San Antonio recently introduced an enhanced version of its multimedia/videoconferencing workstation that includes full-duplex audio capabilities, a high-resolution monitor and internal camera, speaker and microphone. Users' workstations can double as nodes on the vendor's Minx videoconferencing network, which affords intrabuilding videoconferencing in a LAN-like manner by allowing stations to share resources, such as a coder/decoder for hooking into long-distance videoconferences, according to the company. The workstation also reportedly extends the allowable distances between desktops and video servers.

■ Smart hub maker **NetWorth, Inc.** recently put a price tag on its NetWare Application Engine (NAE), a module allowing users to bundle Novell NetWare server functions into their intelligent wiring hubs. The Irving, Texas-based vendor is charging $4,995 for the module running NetWare Runtime — a single-user version of NetWare Version 3.11 minus file, print and directory services. Modules without Runtime cost $3,995.

The NAE, slated to ship next month, contains a 486DX processor with a 120M-byte hard drive and 4M bytes of random-access memory. It includes two serial and one parallel port, as well as two Ethernet links.

NEW PRODUCTS

LAN hardware

Proxim, Inc. has announced RangeLAN/LT, a local-area network adapter card for Compaq Computer Corp.'s Compaq LTE Lite and LTE 386S/20 series of notebook computers.

Users integrate RangeLAN/LT into the fax/modem slot of their Compaq LTE portables. Because the RangeLAN/LT adapter card uses spread spectrum radio, it does not require Federal Communications Commission licensing.

Compaq LTE users with RangeLAN/LT can communicate with any desktop or server that has Proxim's RangeLAN/ISA full-size adapter card, enabling existing LANs to extend into the portable networking and communications environments.

RangeLAN/LT costs $595 per unit.

Proxim
295 N. Bernardo Ave.
Mountain View, Calif.
94043
(415) 960-1630

CBIS, Inc. has announced MachLink LANBoard, a 16-bit XT/AT bus-compatible local-area network card.

MachLink LANBoard can transmit data and applications over the LAN at 50M bit/sec. All data and applications, including the image-intensive applications of computer-aided design, tape backup and multimedia, have increased transmission speeds.

According to the company, this data transmission rate represents a 200%+ increase over 8-bit Ethernet and Token Ring LAN cards. MachLink runs over standard copper, unshielded twisted-pair or twisted-pair cabling.

MachLink LANBoard costs $349 per card.

CBIS
Suite 170, Building 100
5875 Peachtree Industrial Blvd.
Norcross, Ga. 30092
(404) 446-1332

Allied Telesis, Inc. has announced the AT-3612T, a departmental Ethernet concentrator.

The AT-3612T has 12 10Base-T ports, and up to eight AT-3612Ts can be plugged into a single chassis to build a departmental concentrator with 96 ports.

A high level of redundancy is provided by the AT-3612T. Any AT-3612T can behave as a Simple Network Management Protocol-managed concentrator, backup or slave unit in the concentrator, and if one unit malfunctions, it can be hot-swapped and replaced without causing network downtime.

The AT-3612T costs $1,795.

Allied Telesis
575 E. Middlefield Road
Mountain View, Calif.
94043
(415) 964-2771

Interphase Corp. has added a FiberHub 1600 Fiber Distributed Data Interface (FDDI) network concentrator to its line of FDDI solutions.

The product is a stand-alone device providing connectivity for 8 to 16 stations. The FiberHub 1600 can be configured in a variety of ways for ease of implementation and ease of FDDI network expansion. It also has modules that are hot-swappable for maintenance. Users can customize network configurations to suit topology or application needs.

Prices begin at $13,995 for an eight-port configuration.

Interphase
13800 Senlac
Dallas, Texas 75234
(214) 919-9000

Unix

Demax Software has introduced SecureMax/UX 2.0, a software solution that allows users to assess and monitor the security of a multivendor Unix network from a single interface.

The SecureMax/UX 2.0 can manage or audit hundreds of distributed Sun Microsystems, Inc. SunOS, Digital Equipment Corp. Ultrix and Hewlett-Packard Co. HP/UX platforms from a central workstation. Detailed investigations of critical node security are supported. The SecureMax/UX 2.0 can repair problems by automatically creating corrective shell scripts. According to the company, ease of use is a key feature in this release.

Single CPU copies cost $495.

Demax Software
Suite 500
999 Baker Way
San Mateo, Calif. 94404
(415) 341-9017

Modems

Prometheus Products, Inc. has introduced the Ultima Home Office for the Apple Computer, Inc. Macintosh.

The product is a communications center offering voice mail, data modem and desktop fax capabilities: Operating under System 6.0, it is also System 7.0-savvy and compatible with practically all other modems, connecting automatically at the other modems' highest speed, ranging from 300 bit/sec. to 14.4K bit/sec.

Included is an integrated software application called Maxfax that gives users complete control of fax and voice-mail functions, including a single list of voice and fax messages that have been sent or received.

Ultima Home Office for the Macintosh costs $649.

Prometheus Products
9524 SW Tualatin Sherwood Road
Tualatin, Ore. 97062
(503) 692-9600

Cleo Communications has introduced AllSync, a product that provides the capabilities of all major modem types on one board via a single telephone line.

AllSync eliminates the need for external boxes and extra telephone lines, and because multiple modems can be placed on a single board, users do not have to buy new modems whenever their needs change, the company said. The product includes AT Command set functions such as auto-dial, auto-answer and auto-disconnect.

AllSync prices start at $1,095.

Cleo Communications
3796 Plaza Drive
Ann Arbor, Mich. 48108
(313) 662-2002

Workgroup software applications

Altsys Corp. has announced Virtuoso for Solaris.

Virtuoso is an advanced design and production program for the Solaris operating system on Scalable Processor Architecture and Sun Microsystems, Inc.-compatible workstations.

The product was designed for users who want illustration and text-handling capabilities in one program. Virtuoso has basic drawing and transformation tools, unlimited design layers, extensive fill and line control and Adobe Systems, Inc.'s PostScript support.

Virtuoso costs $695.

Altsys
269 W. Renner Road
Richardson, Texas 75080
(214) 680-2060

Electronic mail

Notework Corp. has started shipping A-Gate, a local-area network electronic-mail gateway to the AT&T Mail system.

The gateway will allow users of the vendor's E-mail package for Novell, Inc. LANs — also called Notework — and other LAN-based E-mail products to exchange messages with the AT&T Mail service.

Available in three versions, two of A-Gate's versions connect Notework or CC:Mail to AT&T Mail without Novell's NetWare Message Handling System (MHS). The third version connects Notework, WordPerfect Corp.'s WordPerfect or any other MHS-compliant LAN E-mail package to AT&T Mail by using MHS.

Prices start at $399.

Notework
320 Washington St.
Brookline, Mass. 02146
(617) 734-4317

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Canadian bank finds needed link

Network Systems' remote channel extension units help connect IMS, DB2 databases to backup gear

BY ELISABETH HORWITT
CW STAFF

MONTREAL — Last September, La Confederation de Caisses Populaires et d'Economie des Jardins du Quebec became a test bed for Network Systems, Inc.'s recently announced remote channel extension products.

At stake for the Canadian credit union was the possibility of filling a 30-minute gap in its data center backup system, which handles transactions coming in from a network of more than 10,000 terminals and 1,450 automated teller machines, according to Gary Gutsche, chief technical adviser at the company.

Late last year, Network Systems introduced its 7200 series of host controllers and 7250 series of device controllers, which are said to be the first high-speed channel connections to link mainframes and rotational direct-access storage devices (DASD) over virtually unlimited distances. Until then, channel extenders only supported local links between mainframes and rotational DASDs.

Prior to the introductions, Caisses Populaires, whose primary and backup data centers are 15 km apart, could not have mainframe transactions written directly to backup disks located many miles away. Like many companies, the $44 billion credit union maintains geographically separate data centers to safeguard against a single disaster hitting both.

Much at stake

Caisses Populaires had been using a "roll-your-own" application to scan each disk for updates, load a batch into a file and send it to the backup site at regular intervals via Systems Center, Inc.'s Network Datamover, Gutsche said. The whole process takes 30 minutes, which means that a data center or network failure could cost the company as much as 30 minutes' worth of transactions, Gutsche said.

Because the credit union's computers handle 200 transactions per second at peak times, this would mean the loss of more than 300,000 transactions totaling millions of dollars, he added.

Further delays were common because the 56K bit/sec. links between the primary and backup data centers were shared by a variety of applications.

"At one time, we found that nothing had arrived at the secondary site for an hour and a half," Gutsche said. "This was not acceptable."

Last fall, a test bed was set up to link an IBM Enterprise System/9000 Model 820 mainframe at Caisses Populaires' primary data center, with a bank of HDS-7390 DASDs and a bank of HDS-7490 tape cassette drives at the backup site. The link comprised Network Systems' remote channel extension units and a 45M bit/sec. fiber-based link from Bell Canada.

The configuration was used to log both IMS and DB2 database transactions to the backup devices. During tests, the link handled 58 I/Os per second, with a constant response time of 15 msec, the credit union discovered. This exceeded the company's expectations by about 30%, Gutsche said.

"We think this is because our dedicated fiber link requires less time for error recovery" than the former shared links, he explained.

The tape configuration is still in test mode while the credit union works out how to ensure that tape backups are allocated channel addresses on an as-needed basis, Gutsche said. "Otherwise, we're in full production mode."

Network Systems' devices cost Caisses Populaires approximately $195,000.

Did its homework

The credit union considered using IBM's Remote Recovery Data Facility as an alternative solution. However, the software did not support DB2 at the time. In addition, the company has a policy of minimizing maintenance and overhead costs by adding as little mainframe software as possible, Gutsche said.

Caisses Populaires also considered using IBM's Escon, a fiber-based channel networking system that will soon support links over distances of up to 50 km, Gutsche said. The drawback of Escon was that it required the credit union to set up and maintain its own dedicated, fiber-based connections between the two data centers, he added.

"You have to negotiate with the city, rent conduits under the sidewalks and hire an accredited contractor," he said. In contrast, Network Systems' devices run over T3 services supplied and maintained by Bell Canada at considerably less cost, Gutsche said. He declined to say what the carrier is charging for the link.

Computer Network Technology Corp. announced a similar remote channel extension in April, but the product has yet to ship.

ON SITE

La Confederation de Caisses Populaires et d'Economie des Jardins du Quebec
Montreal

Gary Gutsche

- **Challenge:** More timely entering of banking customers' transactions on backup data center 15 km from primary center.
- **Technology:** Network Systems, Inc.'s channel extension for rotational DASD, which allows direct writing of updates to backup disks over 45M bit/sec. T3 link.
- **Impact:** Lag between transaction update on primary and backup systems cut from 30 minutes or more to 17 msec.

Tools help Internet users discover on-line treasures

BY GARY H. ANTHES
CW STAFF

Users looking for information on the Internet can now get a little help from their friends: Archie, Prospero, WAIS, Gopher and Knowbots.

As the Internet explodes — nearly doubling in size annually — a number of methods are emerging to enable its approximately 4 million users to tap into an estimated 1T byte of publicly available information, including a wide variety of documents, scientific data, software, sounds and images.

The techniques, which lie at the intersection of library and computer science, are geared to making information available to nontechnical users attempting to navigate the Internet, a vast web of multiprotocol networks supporting international collaboration in the fields of research and education.

"There are all kinds of information servers getting set up now. The problem is, how do you find out what's out there and get a copy of it?" said Michael Schwartz, assistant

Continued on page 52

Casting a wide net

Growth of the Internet is spurring the need for tools that make finding information easier

[illegible] linked

[illegible] connected

[illegible] of users

[illegible]

Source: The Internet Society CW Chart: Stephanie Faucher

A trio of navigation aids

Here are the most popular tools for exploring the Internet:

• GOPHER

Gopher offers users transparent access to more than 100 servers worldwide, according to "Connexions," published by Interop Co. Nontechnical users can browse through an information hierarchy called Gopherspace, clicking on items of interest at successive levels of detail. They can also submit words to Gopher for full-text searches at one or more sites.

The user's software is loaded with the address of a "root" Gopher server, which sends an initial list of menu items to the user. The items may include text files, directories, search engines and references to other Gopher servers, which are linked and accessed transparently.

• ARCHIE

Archie maintains an inventory of anonymous File Transfer Protocol sites where users can retrieve things such as public domain software and technical reports from machines on which they do not have accounts.

Archie polls each of 1,100 archive sites monthly and updates a directory of 2.1 million retrievable files containing 120G bytes of data. It is estimated that some 50,000 keyword searches are processed daily through 13 Archie servers worldwide.

• WAIS

Developed by Thinking Machines Corp., Apple Computer, Inc., Dow Jones & Co. and KPMG Peat Marwick, WAIS exists in both public domain and commercial versions.

Natural language WAIS queries go to a server holding a master directory at Thinking Machines, which acts like a 411 telephone service, returning to the user the identities of the server likely to meet the user's needs.

The user then goes directly to that server for full-text word searches and retrieval of text, pictures, spreadsheets, graphics, sound or video. WAIS can rate the relevancy of documents in terms of their similarity to other user-specified documents.

According to Thinking Machines, there are more than 260 Internet WAIS servers and 15,000 WAIS users in 28 countries.

GARY H. ANTHES

Application monitors telecom systems for fraud

BY JAMES DALY
CW STAFF

ATLANTA — The recent arrest of several prominent New York-based computer hackers is the latest example of how vulnerable even the most secure telephone networks can be.

The five defendants are accused of breaking into computer systems nationwide during the past two years and at some sites call-forwarding local numbers to long-distance numbers in order to obtain long-distance services for the price of a local call. Hardest hit was Southwestern Bell, the St. Louis-based Baby Bell, which incurred losses of about $370,000.

A new product, however, may help ease some of the hacker-generated anxiety. Complementary Solutions, Inc.'s Telemate FraudFighter automatically learns normal telecommunications activity levels and then monitors specific trunk groups, extensions, calling regions and Direct Inward System Access codes for fraud. If it detects deviant patterns, it warns users, according to company spokeswoman Jamie Pritchard.

FraudFighter typically requires the firm's Telemate call-accounting package but will work with other call-accounting applications provided the user has a Y-cable to split the signal, Pritchard said.

Users said the key to fighting telecommunications fraud is recognizing abnormal patterns quickly. Several months ago Telemate user Sherry Roggeman, communications coordinator at the Empire Southwest Co. heavy equipment dealership in Phoenix, noticed an unusual amount of telecom activity with Puerto Rico, a place where Empire Southwest does not normally do much business. To her dismay, she discovered that someone had gained unauthorized access to the company's private branch exchange through its 800 number and was charging long-distance calls to the company.

By the time she clamped down and tightened access restrictions, Empire Southwest had been hit for $15,000 in calls. "It's frightening," Roggeman said. "Telecom fraud is a big business, and it's scary to think that someone is spending all this time trying to crack my system."

To detect that kind of 800-number scam, FraudFighter tracks the number of incoming and outgoing calls, their length and day of the week for the trunks being monitored, Pritchard said.

When FraudFighter detects unusual activity, it warns the user with a message on the computer screen, message on the printer, audible alert and/or dial-out to a beeper or other device.

FraudFighter sells for $2,000, which includes one year of support.

Tools help many Internet users

CONTINUED FROM PAGE 51

professor of computer science at the University of Colorado and a pioneer in an emerging field called "resource discovery."

The dozen or so tools for Internet resource discovery use a variety of techniques, from the narrowly focused Netfind, which can locate electronic-mail addresses, to the commercially available Wide Area Information Server, which can search the globe for multimedia information including news, weather forecasts, government software packages and Library of Congress catalogs (see story page 51).

Mark McCahill, manager of microcomputer systems at the University of Minnesota, said he used two of the tools — Gopher and Archie — to find and retrieve public domain software for use in a campuswide E-mail project.

"Archie is a wonderful service because people like me are always saying, 'Gee, I know there's some little bit of software somewhere on the Internet, but I don't have a clue where,' " McCahill said.

The resource discovery tools are an idea whose time has come, Schwartz said: "A few years ago, the network didn't have enough bandwidth or enough connectivity to really make the world of information networking possible. Now it does. In the next few years, we'll see an explosion in information availability."

But Schwartz added that the evolution of the Internet will raise some tricky questions. For example, as the Internet becomes commercialized, methods of accounting and billing for use will have to be devised, and liability issues will surface. "If I maintain a directory, can someone sue me if it's wrong?" he asked.

But the future of the Internet also holds some good news for users. The resource discovery techniques, each developed to solve a particular problem, are gradually becoming stitched together through software gateways. For example, from Gopher a user can invoke a number of the other services, letting each do what it does best while the gateways do the appropriate protocol translations. The user needs to know only the Gopher syntax.

According to Schwartz, users are given a simpler, more unified view of the increasingly complex Internet, which he called "a huge example of a working anarchy."

When You Think

About Building

Applications

That Last

Study's bandwidth projections belie some user expectations

BY JOANIE M. WEXLER
CW STAFF

MANCHESTER, Mass. — Expectations of a coming bandwidth usage explosion have been tempered by a recent Technology Management International, Inc. study of networking trends in more than 250 large commercial firms.

Bandwidth usage growth in corporate networks — local- and wide-area networks combined — should remain fairly steady at a 30% compounded annual growth rate for an indefinite period of time, said Ralph R. Hubbard, president of the consulting firm. Growth rate will largely be fueled, he added, by the emerging applications that many consider the biggest network usage drivers: multimedia, imaging and client/server computing.

However, "we see a much more modest increase in bandwidth than the quantum leaps anticipated by some," Hubbard said. A main reason is that the bulk of the companies in transition are "big IBM shops that will be in transition for a long time," he explained (see chart).

Changing the mix

Migration to client/server will proceed steadily as users move from terminal-to-host architectures in stages

Source: Technology Management International, Inc.

CW Chart: Stephanie Faucher

Industry opinions on the bandwidth issue vary widely, though. For example, Gartner Group, Inc. predicted that widespread client/server applications could result in a 100-fold increase in bandwidth requirements industrywide within three to five years. Some analysts also pointed out that once bigger data highways are in place, users generally have no trouble filling them up.

Commonwealth Edison Co. in Chicago expects to "break even" in bandwidth use with its shift to client/server computing, said Kurt Muehlbauer, supervising analyst at the electric utility.

Some users see their bandwidth needs multiplying from sheer data volume alone, not necessarily from newfangled, bandwidth-hungry applications.

David Eisenlohr, vice president of telecommunications at the Pacific Stock Exchange in San Francisco, estimated that his firm's data traffic will double every two years indefinitely. "This is simply to stay competitive with the information flow of our competitors," he said, "not because the exchange is distributing its computing architecture or initiating big-bandwidth applications."

"I'm in the camp that the industry worldwide is way underestimating its bandwidth needs," said Howard Maynard, senior vice president and director of IS at Young & Rubicam, Inc., a global advertising agency based in New York.

"I see tremendous growth of and demand for bandwidth both within and between buildings," he said. In addition to videoconferencing, Maynard noted, one application certain to boost the bandwidth load at his firm is Lotus Development Corp.'s Notes groupware package.

Duplicating databases

The agency is conducting an experiment with the package that involves "replicating databases across sites, and this summer those databases will include images," Maynard said.

"Conceivably, we need 10M bit/sec. to the desktop now," he said, adding that he is interested in "personal Ethernet" technologies from the likes of Synernetics, Inc., 3Com Corp., Alantec Corp. and others to pump more life into his Ethernet investments.

The tacks taken by these vendors dedicate 10M bit/sec. of bandwidth to each desktop — rather than having multiple desktops share 10M bit/sec. — and switch the traffic over a high-speed (usually 100M bit/sec.) backplane residing in a bridgelike device.

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NEW PRODUCTS

Gateways, bridges, routers

Raycom Systems, Inc. has started shipping Model 200 Local Fiber Distributed Data Interface-Token Ring Bridge.

The bridge can be used in any environment with IBM or IBM-compatible source routing Token Ring nodes. With the Model 200, users can connect a local Token Ring network to another Token Ring network up to 10 km away. Reliability features include independent processors on each interface, which guarantee proper handling of traffic bursts, plus redundant power supplies and self-diagnostic software for high system availability and quick fault-tolerant diagnosis.

The Model 200 Local FDDI-Token Bridge costs $9,995.

Raycom Systems
#C-8
16525 Sherman Way
Van Nuys, Calif. 91406
(818) 909-4186

Coefficient Systems Corp. has introduced MGate/E, a Novell, Inc. NetWare-specific gateway.

MGate/E is designed for users with one or more NetWare subnetworks that are already tied to an Ethernet local-area network backbone by NetWare-compatible bridge/routers. Token Ring, Arcnet or Ethernet subnetworks can be used, and the bridge/router connection can be a LAN or wide-area network link.

Installation of the MGate/E gateway on the Ethernet LAN gives every personal computer on all of the subnetworks access to every Digital Equipment Corp. VAX on the Ethernet.

MGate/E costs $1,995 for five users, $4,995 for 20 users and $11,950 for 60 users.

Coefficient Systems
2039 Palmer Ave.
Larchmont, N.Y. 10538
(914) 834-0446

Madge Networks, Inc. has introduced Smart Ringbridge, a stand-alone, IBM-compatible local Token Ring bridge.

The Smart Ringbridge allows users to forward network traffic at up to 12,500 frame/sec. and transfer data at 16M bit/sec. network bandwidth between two Token Rings. Support for Novell, Inc. NetWare environments is provided, allowing users to forward nonsource router NetWare IPX traffic using standard IPX routing protocols.

Network management software enables users to manage bridges remotely from a personal computer workstation connected to the Token Ring network.

Smart Ringbridge costs $6,995.

Madge Networks
42 Airport Pkwy.
San Jose, Calif. 95110
(408) 441-1300

Network management

SynOptics Communications, Inc. has announced the Lattis EZ-View, a management system for Ethernet local-area networks.

Lattis EZ-View allows the SynOptics intelligent hubs to do basic network management functions such as port partitioning and performance monitoring. The system offers an expanded view capability, which allows all intelligent hubs being managed on the network to be listed in a window called the concentrator list box.

Lattis EZ-View costs $695 per license.

SynOptics Communications
4401 Great America Pkwy.
Santa Clara, Calif. 95052
(408) 988-2400

Micro-to-host

Network Software Associates, Inc. has released DynaComm/Elite Version 3.3, an upgrade of its 3270 emulation software for personal computers running Microsoft Corp.'s Windows.

DynaComm/Elite 3.3 supports Windows 3.1 and TrueType. It features improved performance and an asynchronous link driver, which allows a PC to connect to a host system via the PC's commport and standard asynchronous phone or X.25 lines.

The product costs $495. Upgrades from previous versions are free.

Network Software Associates
39 Argonaut St.
Laguna Hills, Calif. 92656
(714) 768-4013

Customer premises equipment

Telemax Corp. has introduced the Dawn 2020 All-Rates Digital Data Service (DDS) Unit.

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Dawn 2020 costs $595.

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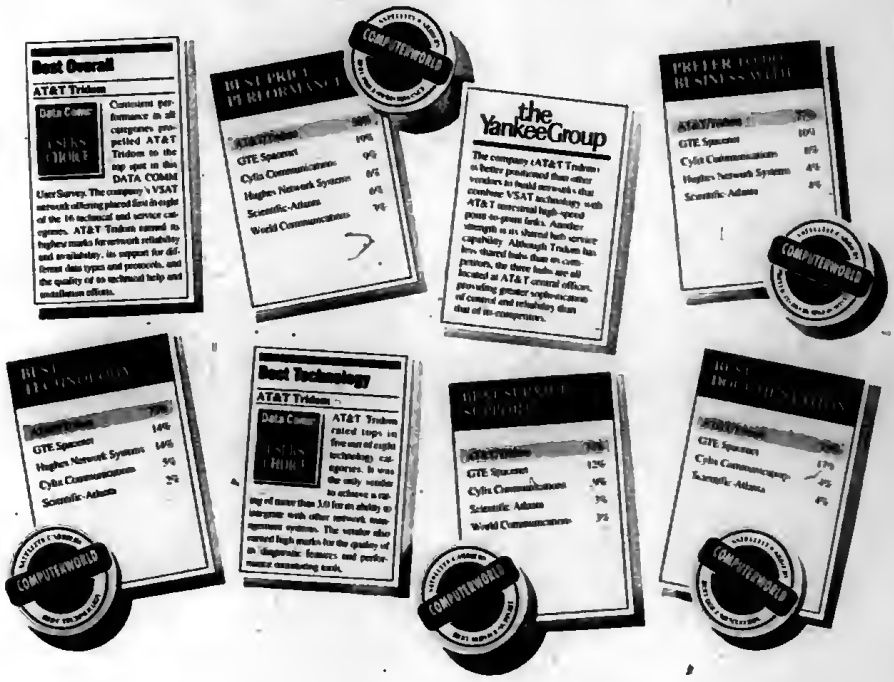
What are VSAT users saying about AT&T Tridom?



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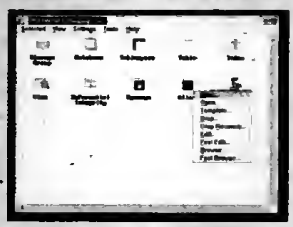

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Our initial OS/2 offerings are really giving DBAs a very fresh new look on things.

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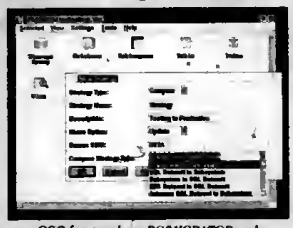

OS/2 front-ends on RC/MIGRATOR and RC/UPDATE let DBAs concentrate on DB2 object tasks instead of products.

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Cheerio to Unix, cereal giant says

BY MARK HALPER
CW STAFF

MINNEAPOLIS — General Mills, Inc.'s distribution group has a true computer confession: It tried Unix, but it did not inhale.

The $7.2 billion cereal giant's open systems flirtation lasted all of a few months in early 1991, after the company installed a Hewlett-Packard Co. 9000 minicomputer running HP's Unix implementation, HP/UX, at its West Chicago, Ill., plant.

It did not take long for General Mills, based here, to return to its HP MPE senses, a recovery enabled in part by what the company discovered was the ease of portability between HP/UX and the proprietary MPE/IX operating system.

"There's a lot of panacea thought today that says you have to have Unix," said Mike Meinz, principal technical consultant in General Mills' IS group. "You don't have to have Unix."

The company's Unix project was a pilot for what would have been a series of HP/UX installations running warehouse management software at nine General Mills distribution centers and eight plants around the country.

But the Unix euphoria, if it ever set in at all, never spread beyond West Chicago. Within months, General Mills had pulled the plug on the 9000 and ported the warehousing software over to the MPE/IX operating system running on a score of proprietary HP 3000 minicomputers. MPE/IX is the latest release of HP's proprietary operating system. It is compliant with the government's Posix open systems standard.

The move was logical because General Mills was already well-outfitted with HP 3000s. It had 21 of them spread among its data center in Minneapolis and its plants and was about to begin the

General Mills' Meinz: *'You don't have to have Unix'*

process of migrating them from HP's older versions to new models built on HP's Precision Architecture microprocessor.

This raises the question of why General Mills turned on to Unix and the 9000 in the first place.

> THE DIVISION CHOSE Unix because its preferred warehousing software was available only for Unix platforms.

According to Meinz, the autonomous distribution division chose Unix because its preferred warehousing software — an application provided by a small third-party vendor — was available only for Unix platforms.

Good warehouse management software can provide a strategic advantage in the packaged-food industry, where factors such as shelf life and inventory control affect a company's fortunes. The distribution division wanted nothing less than what it considered the best software and was willing to change platforms to get it, Meinz noted.

Managers in the distribution operations farmed out maintenance of the program to the vendor but came to the sobering realization that, given General Mills' existing HP 3000 orientation, a 3000 implementation might be more prudent — especially because, as Meinz noted, the folks in distribution "weren't happy with the [vendor's] bills."

The distribution group turned to the IS group to see what could be done internally. IS' answer was to port the warehousing software to MPE/IX.

In one-third the time

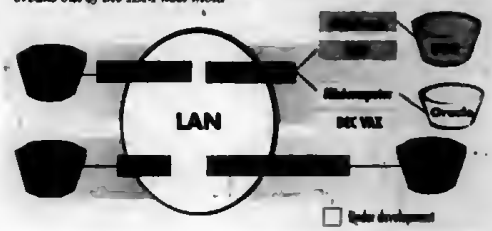
What followed became a testimonial to MPE's portability. Meinz said he had anticipated the porting project would take six months, but it took only two. And much of that time was spent developing enhancements to the existing program rather than actually porting to it. General Mills had purchased the source code when it bought the software.

According to Meinz, the port was a cinch because the software vendor's program is based on Oracle Corp.'s database server software. As such, it uses many of the same building blocks in Oracle's MPE port, like the C programming language and the SQL Forms development environment.

Meinz said the SQL Forms portion required no recompiling, and the C language portion required only a simple recompile process.

Not the mainframe

With the Zim client/server deployment scheme, Sterling Software breaks out of the IBM host mold



CW Chart: Stephanie Faucher

Sterling Software steps up client/server strategy

ANALYSIS

BY JEAN S. BOZMAN
CW STAFF

WOODLAND HILLS, Calif. — During the 1980s, Sterling Software, Inc. grew by acquiring software companies with products aimed at the IBM mainframe. The Sterling portfolio of packages and data-extraction tools grew, but nearly all of the new products played within the four walls of IBM's Systems Application Architecture.

One notable exception was Zanthe Corp., a Canadian firm with personal computer-based technology that held the promise of client/server computing.

This year, Sterling launched a client/server strategy, counting on the portability of Zanthe's Zim, a portable application development language with a built-in relational database. In April, Sterling said that Zim, running on OS/2- and DOS-based PCs, would soon be linked with a number of relational databases.

Versions of Zim for IBM's OS/2 Database Manager, Microsoft Corp.'s SQL Server and Oracle Corp. databases are slated to ship this quarter.

This fall, $220 million Sterling will accelerate its move into client/server computing by shipping packages that will allow Zim to access several Unix databases.

Sterling also plans to announce a homegrown product, code-named Odyssey, that links IBM PCs with legacy applications on IBM mainframes. Another product, code-named Galil by its Israeli inventors, was designed to manage storage of local-area network data by 1993.

One Zim user was pleased that Sterling has thrown some muscle behind the product. The Four Seasons Hotels Ltd., a 23-hotel chain based in Toronto, used Zim to create strategic systems for customer billing, guest registration and hotel administration on Unix-based Hewlett-Packard Co. HP 9000s with PC clients.

Prior to Sterling's 1989 acquisition, "there was a chance of Zanthe folding its tent and going away," said Geoffrey McDowell, manager of technology and research at the hotel. "Now, we know that won't happen."

Continued on page 62

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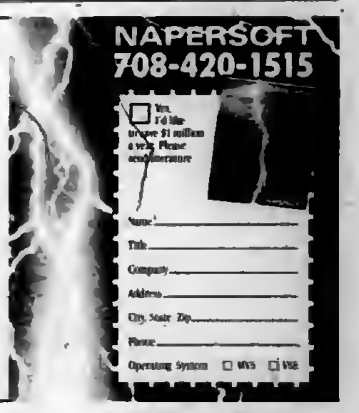


Information Builders' upgrade improves VAX/VMS integration

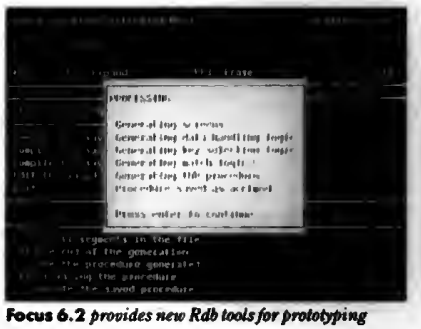
BY MELINDA-CAROL BALLOU
CW STAFF

NEW YORK — Information Builders, Inc. has expanded support for native Digital Equipment Corp. VAX files and added a window-driven front end to a new release of Focus for VMS.

Focus Version 6.2 offers better options for managing concurrent user access to Rdb tables and includes new query optimization and trace facilities.

It also reportedly exploits new Rdb data access features that limit record locking through greater use of read-only mode.

One user was particularly pleased with the performance and access improvements resulting from the new concurrency options. The new version eliminates "many of the locking problems which had previously occurred when accessing Rdb, allowing more users to have concurrent access to the database," said Bob Romoser, a systems analyst at the Public Utilities Commission of Ohio, based in Columbus, a beta-test site for the new release.



Focus 6.2 *provides new Rdb tools for prototyping*

Focus 6.2 also provides new Rdb tools for prototyping, including Rdb File Talk, a window-driven utility that makes it easier to define new Rdb tables, the company said. Rdb Modify Talk automatically generates transaction processing systems with default data entry screens and function keys.

"Some of our people used Rdb Modify Talk and found that it allowed them to easily generate prototypes for simple Rdb applications," Romoser said.

Information Builders officials said they are also working with DEC to integrate Focus with DEC's RdbExpert tuning tool.

In addition, new features for the All-In-1 interface make it easier for developers to tightly integrate Focus applications with All-In-1, Information Builders officials said.

New tools for generating RMS applications and creating RMS files are also available with Focus 6.2, as are new ways of managing the RMS lock manager, they added.

Focus Release 6.2 for VMS is shipping now and is priced from $3,200 to $19S,000.

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Integris deals with Pyramid

BY KIM S. NASH
CW STAFF

BILLERICA, Mass. — Integris, the systems integration unit of Bull HN Information Systems, Inc., and Pyramid Technology Corp. have signed a deal that fits snugly into the "you scrub my back, I'll scrub yours" category.

Integris, based here, plans to resell Pyramid's MIServer line of Unix servers. In turn, the San Jose, Calif.-based hardware maker will sell Integris' consulting and integration services to its customers.

The reseller deal is the first effort by Integris to expand its direct sales channel, according to Steve Gardner, Integris' president.

"Pyramid is important to us because of their high-end strength in open systems," added Stan Wysocki, an Integris vice president.

The Bull subsidiary's mandate is to convert IBM mainframe users to Unix environments. The group operates independently of Bull, with separate profit and loss statements. According to Gardner, revenue for 1991 totaled $14 million — about $6 million short of Gardner's original projections when Integris was launched eight months ago [CW, Nov. 18, 1991].

Key to Integris' downsizing push is UniKix, a software tool that regenerates Cobol/VSAM CICS applications for Unix platforms. UniKix currently supports 10 versions of Unix, including those from Data General Corp., Bull, IBM, Sun Microsystems, Inc., Sequent Computer Systems, Inc. and Solbourne Computer, Inc.

Extra marketing muscle cannot hurt 11-year-old Pyramid, which is expected to report a loss this week for the third quarter, according to Bear, Stearns & Co., a brokerage firm in New York.

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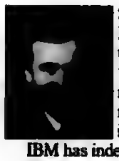
Attention: Marketing

COMMENTARY

Sam Albert

IBM: Global co-opetitor



Someone has called IBM's recent spate of third-party alliances "*kereitsu* run amok" — a reference to the Japanese scheme of interlocking suppliers.

IBM has indeed become the classic American kereitsu: a horizontally and vertically integrated industrial organization with a financial affiliate — IBM Credit Corp. — as a wholly owned subsidiary.

The most recent example is last week's announcement that IBM will develop 256M-bit chips jointly with Toshiba and Siemens AG. The project is simply too massive for any of the three partners to undertake alone.

This is all a form of "co-opetition," a cross between cooperation and competition. Because the technology has become so wide-ranging that no company, not even IBM, can do everything itself, even fierce competitors find themselves working together in various niches of the industry.

IBM HAS PLENTY of world-class production capacity available and is more than willing to make it available to other companies.

If you understand the different kinds of arrangements IBM is entering into, you can better sort them out. The strategy has four foundational goals, and any new alliance formed by IBM or an IBM business unit must meet at least one of them:

- To accelerate the development of new technologies.
- To broaden the reach and capacity of IBM's worldwide distribution capabilities.
- To reduce the costs of bringing new products to market.
- To grow IBM's revenue streams faster.

On this foundation, IBM is building a new operational structure based on an assortment of relationships:

- **Business partnerships** — IBM has literally thousands of these, and their primary importance is to enhance IBM's distribution. These include IBM-authorized agents, dealers and remarketers. Business partners add value by providing their customers with software and ancillary equipment as well as computer hardware.
- **Joint ventures** — These typically result in the creation of a new company by IBM and its partners. Taligent and Kaleida are the most prominent fruits of the IBM and Apple relationship. IBM has also formed Display Technologies with Toshiba to manufacture color flat-panel displays and has joint-venture arrangements with Motorola, Diebold, Coopers & Lybrand and U.S. Trust.
- **Equity partnerships** — Since late 1988, IBM has become a kind of venture capital company, financing smaller, mostly cash-poor companies with promising technologies of interest to IBM. The company has formed more than 50 equity partnerships in the U.S. and another 200 or so worldwide.

So far this year, IBM has announced equity agreements with Red Shark Technologies, a developer of multimedia enabling tools; Sapiens International, developer of AD/Cycle enhancement and enabling tools; and Parallan for that firm's network server.

- **Technology sharing/development agreements** — IBM has entered into a number of these agreements, such as those with Auspex Systems for the development of high-performance file services for the Unix environment; with Go for a pen-based computer operating system; and with former nemesis Hitachi for the next generation of printer engines.

Technology agreements will become more common in the future as the cost of research and development skyrockets and the margins in the computer industry shrink.

- **Licensing agreements** — These give IBM access to hardware, software or services. For example, IBM has licensed Novell's portable network software for use on the RS/6000 and has licensed two applications from Lotus to provide immediate help to its still somewhat anemic OfficeVision and OS/2 software offerings.
- **OEM agreements** — IBM has plenty of world-class production capacity available and is more than willing to make it available to other companies. Some notable OEM agreements currently in place: with Wang for PS/2 and RS/6000 models; with Videocart for custom-built portable computers mounted on grocery shopping carts; and with American Airlines for PS/2 models that will carry the Sabre system logo (which will be remarketed in the travel industry).

How is IBM's alliance strategy working out? It's too early to issue a meaningful report card. But IBM badly needs an honor roll performance.

Albert is president of Sam Albert Associates in Scarsdale, N.Y.

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Sterling steps up client/server strategy

CONTINUED FROM PAGE 59

If the client/server strategy is successful, Sterling's application development tools will tap into IBM mainframes as easily as Unix relational databases. Sterling is ready to forge alliances, as it did with Tandem Computers, Inc. last year, to make the plan work.

Sterling is also adapting its year-old Corporate Applications Management Initiative — a framework to manage the applications development life cycle — to embrace Unix data sources and heterogeneous computer networks, said Marshall Warwaruk, vice president of business development at Sterling's systems software group.

Industry analysts said Sterling will have a hard time competing with the marketing might of $1.3 billion Computer Associates International, Inc., another formerly IBM-centric firm with acquired packages that is currently moving to client/server products.

Integration a key

To gain new business, Sterling will have to integrate its tools better than CA does, according to analysts.

Users will be the ones to determine whether the new products offer cooperative processing between clients and servers or whether the mainframe does most of the work.

"Sterling will have to prove that they are doing client/server according to the intent of the law, rather than the letter of the law," said Aaron Zornes, a software analyst at Meta Group, Inc. in Westport, Conn.

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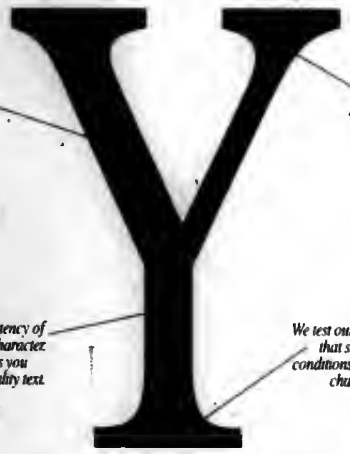

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IN BRIEF

Sybase adds HP platforms

■ **Sybase, Inc.** said it has added **Hewlett-Packard Co.**'s Precision Architecture HP 9000 Series 800 minicomputers and HP 9000 Apollo Series 700 workstations as development platforms.

■ **Unisys Government Systems, Inc.**, a wholly owned subsidiary of Unisys Corp., won a 10-year, $338 million contract from the General Services Administration (GSA) to develop the GSA Systems program. Unisys will provide several low-end and high-end Unisys A series mainframes, Intel Corp.-based desktop systems, Grid Systems Corp. 286-based notebook computers and other peripherals and software. It will also provide network integration as well as build and manage GSA's data center.

■ **Cable & Computer Technology, Inc.**, an Anaheim, Calif.-based contractor, last month became the first of three prime contractors in the U.S. Navy's proof of concept development program, dubbed Next Generation Computer Resources (NGCR), to deliver fully compliant Futurebus+ hardware. Other contractors include **Raytheon Corp.**'s Marlboro, Mass.-based Equipment Division, which seeks to complete acceptance testing of its NGCR systems before the end of the summer, according to Cable & Computer Technology officials. The status of the third contractor, **Litton Data Systems, Inc.** in Pascagoula, Miss., is unclear, Cable & Computer Technology officials said.

■ A Virginia secure-systems firm, **HFSI**, said its general-purpose "trusted" computer system has received a B3-level rating from the **National Security Agency's National Computer Security Center**. The XTS-200 supports client/server applications, enforcing security on open systems.

■ The 650-branch **Slovakian Savings Bank** has placed an order for $55 million worth of computer infrastructure gear from **NCR Corp.** The project, which has at its heart two NCR System 3600 multiprocessor Unix-based computers, will provide massively parallel computing, client/server technology, object-oriented programming and satellite communications.

■ Minneapolis-based **Lawson Associates, Inc.** will expand functions to its Retail Management System software by packaging it with a personal computer-based point-of-sale application from **Comshare, Inc.** in Ann Arbor, Mich.

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And what about capacity? With an average throughput of six pages per minute, 100 printers can deliver one-quarter of a million pages per day during normal working hours. However, 100 users typically print fewer than 10,000 pages total — that's an excess capacity of 2,000 percent.

Even if they share personal printers, your office staff still has limited capabilities, low throughput, and logistical problems. Some printers handle the PostScript protocol; others handle HP-PCL. None can print large jobs fast or handle a variety of media simultaneously.

DECprint Services: Our Strategy at Work

Digital's print strategy for your office environment is twofold. First, we move your printers onto the network to give people easy access to a variety of printers. Second, we provide you with DECprint services — the printers, software, and service that work in combination to satisfy all your business requirements. The result? You need fewer printers and you save money — *as much as $75,000, or half the annual cost of 100 private printers.*

The Right Print Strategy Makes Implementation Easy

Your plan of action should be simple: Offer a variety of printers that is customized for your office environment, and place these printers closest to those who use them most often.

For example, place one of Digital's low-cost DEClaser printers in every aisle or so of a department. Then, place a PrintServer printer in a central location for servicing special requirements, such as printing large jobs or printing on large-size paper. A Colormate printer can be located beside the PrintServer to meet color printing needs.

Being able to select from a range of Digital printers — handling sheet sizes up to B (11 × 17 inches) or A3 (297 × 420 mm) at speeds from 4 to 40 pages per minute — lets you meet all your business printing needs. A sampling of Digital printers includes:

- **DECLaser 2250**
An 8-ppm printer with two input trays — one to handle plain paper, the other to handle letterhead stock or transparencies.
- **PrintServer**
Appropriate for fast printing of large print jobs, one or two of these printers can meet the print requirements of 50 to 100 users.
- **Colormate PostScript**
Offering color printing for transparencies as well as paper.

As for your existing hardware, Digital's print strategy accommodates many printers, allowing you to move the printers you already have onto the network. Although these printers may not offer some advanced print features, they can very often be shared.

Supporting Software Completes the Picture

Digital's print software and PostScript printers can handle many print protocols — and the output looks the same across print-family members. Protocols include:

- PostScript
- ASCII
- HP-PCL
- Apple LaserWriter operators
- TEKTRONIX 4010/4014.

PRINT STRATEGY

Digital's print strategy takes the printer out of the private office and puts it on the shared network. So now, an office of 100 people utilizes 8 personal, 12 shared, and 2 departmental printers. As a result, your cost in terms of dollars and paper is significantly reduced to:

- **$75,000 per year, and**
- **60,000 pages per day (total capacity).**

Our print strategy means a decrease in office printers and an increase in office savings.

What's more, VMS users are informed when their jobs start, when they're completed, or when a job cannot complete because the printer is out of paper.

Along with a variety of printing hardware and software, DECprint services also provide:

- A flexible font licensing program that can relieve you of the "which printer is licensed to use which font" dilemma
- The capability for system administrators to manage any number of printers from their desks
- Direct user access to printers in remote cities via your office network and Digital's Distributed Queuing Service (DQS)
- The ability for PC and Macintosh users to share the same printers and have full network access to mail and file services, via a PATHWORKS server.

Our Print Strategy Will Keep You Smiling

Your print strategy should decrease printing expenses and increase office productivity. Digital's print services combine printing hardware and software to provide you with this kind of total printing solution.

For more information on Digital's print services, call 800-DIGITAL (800-344-4825), ext. 59J.

NO PRINT STRATEGY

If each person in your office has their own private printer, you're using up a lot of extra resources — including money. For example, look at an office of 100 people and 100 desktop laser printers. This one-to-one print strategy can cost you up to:

- **$150,000 per year, and**
- **384,000 pages per day (total capacity).**

Not a situation your office can live with — for very long.

Wouldn't You Rather Be In
MEETINGS THAT WORK?

We all know about meetings that DON'T work:

When you don't have the information you need right there when you need it. Or a key contributor is unable to travel across town or around the world to attend. So you don't reach any conclusions or make any decisions and end up scheduling another meeting. Then you wait days for the first meeting's minutes so you can prepare for the second one.

Productivity? It's out the window.

There is a better way:
MEETINGS-THAT-WORK.
The innovative, distributive group work conferencing solution from Digital.

Real Work in Real Time, Regardless of Location

The dynamics of a meeting vary with its purpose. One meeting may be between two individuals in a collaborative work session. Or it could be an individual conducting group training. Or several groups together in a distributed conference.

In any of these meeting scenarios, Meetings-That-Work can link people via a range of technology-based configurations:

- Desktop teleconferencing
- Networked conference rooms
- Plug-and-play mobile meetings
- Multimedia conferencing.

And Meetings-That-Work can bring the participants the information needed to get the work done in a variety of ways:

- Voice and text
- Voice, text, and graphics
- Voice, text, graphics, and video.

Realtime Results Too

Meetings-That-Work enables meeting participants to:

- Access critical information online, on the spot
- Create agendas and minutes online, then distribute them in a timely manner
- Clarify and track action items online
- Create and edit documents and spreadsheets online in real time
- Project key documents to accommodate larger group meetings.

In this way, meetings can be managed more effectively — enabling participants to focus on the business at hand, getting group "buy in" as the meeting progresses. The entire decision-making process is sped up and improved, which in turn leads to more effective results.

In addition, Meetings-That-Work can help to decrease travel costs and reduce employee "wear and tear." A team effort no longer means that everyone has to sit in the same room together.

And productivity? Now it soars.

Digital Experience Strengthens the Agenda

Meetings-That-Work combines Digital and third-party distributed user application products.

The solutions package is available in standard and customized configurations. Solutions are designed to fit any of today's multivendor computing environments.

From initial evaluation to solution design and implementation, our team of experienced Meetings-That-Work consultants provides business and technical support and training as needed.

Here's Your Next Action Item:
For more information on how Meetings-That-Work can work for your organization, contact the Meetings-That-Work consulting team at 800-742-1755.

The ESE50 Solid State Disk
MEETS THE NEED for I/O *SPEED*

For more information on the ESE50 Solid State Disk, call 800-DEC-INFO (800-332-4636), ext. SSD, and request an ESE50 product information sheet.

From financial trading and telecommunications to retail, pharmaceutical, and scientific environments, the ability to achieve consistently fast access to data has become a necessary business requirement.

To that end, Digital offers you the ESE50 Solid State Disk — technology that can access data 100 times faster than a traditional magnetic disk. This high-performance disk not only adds significant speed to your system's applications, but also maximizes your system's capabilities.

Easy to use. Easy to implement. And easily a price/performance leader.

Plug-and-Play Feature Makes ESE50 Easy to Use

With the ESE50 Solid State Disk, you get the results you need without investing a lot of time learning new technology. Just like a magnetic disk, the ESE50 plug-and-play capability means it can be added to Digital VAX and VAXcluster systems without application or operating system modifications. In short, you get a significant increase in application performance without expending time and money on application rewrites.

What's more, this new-generation solid state disk is an 8-inch, half-rack RA92-size product installable in SA900 storage array cabinets. These features let you:

- Integrate the ESE50 with magnetic disk and tape devices
- Conserve floorspace, power, and air conditioning
- Optimize HSC controllers by providing the ability to support up to 1 GB of solid state disk storage through one port.

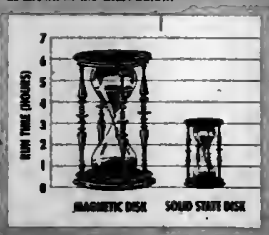
Most important, the ESE50 Solid State Disk leads in price/performance, making it affordable for many new applications. For example, the 600 MB ESE50 is priced at $275 per megabyte — more than a 58 percent savings per megabyte over Digital's previous-generation solid state disk technology.

SOLID RESULTS

Our solid state disk technology provides the highest I/O performance for applications that require fast response. This capability allows you to increase productivity, decrease time-to-market, and optimize system resources.

Here's a sampling of positive results garnered by some of our customers:

- By installing Digital's solid state disk technology, an electronic future exchange in France was able to increase the number of orders handled by a factor of 10.
- By placing work files on Digital's solid state disks, a leading U.S. semiconductor manufacturer was able to reduce interactive statistical process control application response time by over 35 percent.
- A New York banking and brokerage firm moved its frequently accessed trading database to Digital's solid state disk technology and experienced a significant reduction in batch processing run times. In fact, one application's run time was reduced from six hours to just three hours, as shown in the chart below.



PARTNER SHIPS

Pioneer and Digital: A Decade of *Quality*

DECWORLD '92 marked the 10-year anniversary of Digital's relationship with Pioneer, a distributor of computer products, software, and services. Pioneer is one of Digital's largest full-line distributors, with 40 sales offices and 180 Digital-trained sales and support representatives around the country. Value-added capabilities that have helped Pioneer attract a large customer base include:

- Customized systems including hardware, software, and services
- Integration of VMS, ULTRIX, Digital layered, and third-party software products
- Solutions based on relationships with software suppliers, including expertise in imaging, technical publications, and database products
- Experience in applications solutions including distribution, manufacturing, and financial services.

Two Views: Partner and End User

Patrick O'Connor, Pioneer's Senior Corporate Marketing Manager, begins a discussion on added value by pointing out a feature of Pioneer that is unique among Digital distributors. "We not only resell Digital products, but we also use them to run Pioneer's daily business," he says. "We are a state-of-the-art Digital end user. Pioneer currently has two large VAX systems comprising two VAXclusters. These VAXclusters support 900 Pioneer employees."

The added value to customers is clear, according to Bob Bailey, Pioneer's Director of Marketing. "We can bring customers in, have them meet with our MIS people, and discuss with them some of the same opportunities that we've experienced as a Digital end user.

"In fact, we did that a few weeks ago with a large financial institution," Bailey continues. "Since we've done a lot of work in the area of redundant communications and networking, they came to us for assistance in getting started in that effort. Our own experience allowed our MIS people to work with them in outlining a strategy best suited for their business."

Pioneer's Offerings Are Proof of Its "Pursuit of Excellence"

A copy of Pioneer's mission and quality statements hangs in each of the company's facilities, according to Bob Bailey. The statements paint a portrait of excellence, integrity, and, above all, meeting and exceeding customer expectations.

Pioneer's quality statement emphasizes commitment, fairness, integrity, and quality.

But these words aren't confined to paper. They're put into action through extensive programs and services.

These ideals become reality as Bailey and O'Connor discuss the many offerings Pioneer provides in order to enhance customer satisfaction. Offerings include:

- **Pioneer Evaluation Center**
Providing over one million dollars' worth of evaluation equipment. The equipment, fully loaded and fully functional, is delivered by a systems engineer who serves as a guide for the end user in understanding the system.
- **Digital Dedicated Systems Engineers**
Offering on-site systems consulting, network design, and capacity planning.
- **Pioneer Porting Centers**
Seven centers across the country that enable customers to port their application software to Digital platforms.
- **Proposal/Configuration Center**
The center provides cost-of-ownership studies, extensive proposals, configurations, and product literature.
- **PC by Pioneer**
A new service launched in conjunction with Digital's DESKTOP DIRECT organization. Customers simply dial 800-247-2800 to order and receive a fully configured personal computer, or other PC products.
- **Software Applications**
Providing software applications to meet customers' requirements. Pioneer's knowledge of and agreements with leading software providers bring robust solutions to the end user.
- **Technical Application Centers**
Three centers located across the U.S. that are designed for custom integration of application software.
- **National Accounts Program**
Multi-location account coverage and technical support in conjunction with corporate agreements.
- **A Technical/Executive Seminar Series**
Offering approximately 70 seminars nationwide encompassing 15 different topics, such as PATHWORKS Networking, UNIX for Management, and a series on product updates.
- **Extensive Value-Added Reseller Programs**
Providing quality VARs with extensive support services in many areas, including lead generation, a co-op program, advertising, and financial services.

Attention to Service Now and in the Future

Strengthening and enhancing its customer offerings are Pioneer priorities, according to O'Connor. It's the kind of service that doesn't end after the sale. "At Pioneer, customers are assigned their own personal service representative who is dedicated to their business and dedicated to complete customer satisfaction," Bailey explains.

This focus on service has also resulted in the creation of a portfolio of services — a program in partnership with Digital that provides Network Integration services, including network consulting, network implementation, network management, and desktop services for customers.

Even with an already extensive list of offerings, Pioneer has embarked on "FutureStart" — a total quality management program to improve every area of Pioneer business. The future vision of Pioneer extends the portfolio of services to include Digital's Alpha technology. "One of Pioneer's top priorities is ensuring that our customers' investments are protected," said Bailey, "and we share that concern with Digital."

For more information on Pioneer offerings, call Pioneer at 800-227-1693.

FLASH

Back by Popular Demand: Software Savings with VAX System Purchases

Purchase any VAX 4000, 6000, 7000, or 9000 system or upgrade and save 15 percent on select software products or license upgrades. [illegible] more than 50 of the most popular [illegible] applications on the market today from:

- Andover Controls
- ASK Computer Systems
- Cognos Corporation
- Data and Business Software
- DBC Systems, Inc.
- Ingres
- Lotus [illegible]
- Oracle
- [illegible]
- Pick
- Informix
- Spectrum Computing
- [illegible]

This [illegible] by the limited time only.

For more information, call [illegible] (800-446-[illegible]).

On the Road with DBC Passport

Whether your business travels take you around the U.S. or throughout the world, Digital's DBC Passport service makes it easy for you to get fast hardware repairs for your portable computers. You simply make one phone call to Digital, and we'll provide:

- Call screening to determine if you have a hardware or software problem
- Door-to-door pickup and delivery via express courier
- Two-day turnaround time
- Automatic virus detection.

What's more, you don't have to worry about surprise expenses or hidden costs. A one-time fee covers all hardware repair expenses for up to three years. That means no extra charges for courier service or service abroad.

Our DBC Passport service is designed to minimize your business disruption and maximize your flexibility. Plus, you are assured of quick repair service without sacrificing the safety of your valuable data.

So, pack your portable computer without reservation. DBC Passport is honored in a growing number of countries throughout the world.

Part Number	Description	Price
FB-SE101-CD	1-Year DBC Passport Service Agreement	$200
FB-SE102-CD	2-Year DBC Passport Service Agreement	$325
FB-SE103-CD	3-Year DBC Passport Service Agreement	$700

Pickup and delivery must be within the same country.

For more information, call 800-PC-BY-DEC (800-722-9382).

Digital Consulting Services Are Rated "R"

As many businesses struggle to remain competitive in an increasingly global market, the term "reengineering" has become the lastest industry buzzword. And rightly so, as the reengineering of broken or obsolete business processes is indeed a growing concern among many companies today.

That's where specific Digital offerings can help, according to Pat Zilvitis, Business Manager for Digital Consulting Services. These services can take your business full circle — from an initial evaluation report to implementation of a completely new business strategy.

Here, Zilvitis talks about the full spectrum of Digital Consulting Services, and how our complete solution helps you not only reengineer, but also rethink, retool, and ultimately, reenergize your business.

Defining Digital's Consulting Business

Digital Consulting Services have undergone marked changes in the last year and a half, according to Zilvitis. These changes include expansion into three vital business segments: Enterprise Engineering, Information Systems Management, and Enabling Technology.

"Enterprise Engineering provides a framework to assist you in analyzing and implementing the right processes to satisfy your business strategy. Our own history as an engineering, manufacturing, and logistics company, including the fact that we have incorporated engineering disciplines in the design of out hardware, software, and networking capabilities, gives us expertise that benefits the client," Zilvitis explains.

"Information Systems (IS) Management takes a look at the role of information technology within a company — in terms of its ability to effectively support a company's business strategy.

"Enabling Technology can be described as the foundation of Enterprise Engineering and IS Management," he continues. "Enabling Technology encompasses hardware and software technology, networking technology, and multivendor connectivity and interoperability."

The major benefit offered by these three business segments is in satisfying the total solution needs of clients, according to Zilvitis. "And it's done on a one-stop shopping basis," he adds. "We offer services that range from consulting to outsourcing, with all the steps in between tailored to the client's needs."

People Plus Technology: A Total Solution

There are some companies that buy technology without first investigating if the vision of top management is in sync with the rest of the company. "We understand that with new technology comes a host of challenges," Zilvitis says. "Our ability to help clients redesign their business processes and deal with the human side of change gives us a differential advantage. It's what makes the Digital Consulting Services solution so complete."

The ability to help clients redesign their business processes and deal with the human side of change gives Digital a differential advantage.

Real Challenges Real Results

Our consulting offerings carry with them a history of successful partnering and alliances. The following examples each convey a customer challenge, the Digital Consulting Services solution, and, most important, the positive results that followed.

Volkswagen: Worldwide Automobile Manufacturer

With international competition getting tougher all the time, Volkswagen is working on an aggressive plan to dramatically reduce the product development time of all its vehicles by 1995. Achieving better time-to-market means more cross-functional integration — a change that impacts every single Volkswagen employee.

To that end, Digital Consulting Services offered to help analyze business processes and interlinked process chains. This extensive analysis plus improvement methods provided by Digital consultants assisted Volkswagen in shortening, optimizing, and redesigning its process chains. As a result, Volkswagen has seen significant improvement in time-to-market.

Fleet Precious Metals: A Subsidiary of Fleet National Bank

Fleet Precious Metals faced two challenges. First, the organization needed to move a critical application to a new technology without disrupting operations or losing any customer data. Second, Fleet saw a need to tie together bank applications running on systems from a multitude of vendors.

Using Digital-developed Enterprise Engineering and business analysis methodologies, Digital consultants worked with Fleet managers in defining Fleet's business processes and identifying areas that needed strengthening. Digital consultants were able not only to design a new system to include new business functionalities identified by Fleet managers, but also to enhance the customized software Fleet was already using.

As a result of the Fleet/Digital partnership, a turnkey system with enhanced functionality and improved efficiencies now fully supports Fleet's data processing requirements.

Yamaha: Global Musical Instrument Company

Yamaha, the largest musical instrument company in the world, needed to prepare to make significant investments in a high-quality large scale integration design system and a corresponding fast time-to-market production process to continue to increase its market share. The company turned to Digital for help with strategic planning in terms of their semiconductor design and engineering business.

Digital consultants provided Yamaha with extensive analysis on current design and manufacturing processes. From this information, a plan was produced that outlined actions required to optimize the semiconductor operations now and that served as a guide for future investment decisions.

This plan was successful in providing Yamaha with ways to improve information flow throughout the organization — positively impacting time-to-market, productivity, and quality.

For more information on Digital Consulting Services, call 800-DEC-INFO (800-332-4636), ext. 445, and request a Digital Consulting Services brochure.

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NEW PRODUCTS

Data storage

Metrum Information Storage has started shipping the RSS-600B and RSS-48B data storage libraries.

The libraries are integrated with the company's new RSP-2150 digital tape drive. The combination of a high-capacity drive and tape media with robotics technology has increased the storage capacity of the RSS-600B to 8.7T bytes and the RSS-48B to 696G bytes.

Pricing for the RSS-600B robot starts at $265,000 and at $75,000 for the RSS-48B. The RSP-2150 drive costs $32,900.

Metrum Information Storage
4800 E. Dry Creek Road
Littleton, Colo. 80122
(303) 773-4700

Database management

Platinum Technology, Inc. has released Platinum RC/Update and Platinum RC/Migrator for IBM's OS/2.

Platinum RC/Migrator is a tool designed for DB2 migrations, alterations and subsystem/DDL file comparisons. Platinum RC/Update is a DB2 object-management tool that provides the needed functionality to manage and maintain DB2 objects and data and to support the application development area.

Mainframe versions of Platinum RC/Migrator and Platinum RC/Update range from $17,250 to $87,297, depending on CPU size.

Platinum Technology
555 WatersEdge Drive
Lombard, Ill. 60148
(708) 620-5000

CDB Software, Inc. has announced CDB/Fast Copy and CDB/Rexx software packages.

According to the company, CDB/Fast Copy completes the backup process 10 times faster than its competition.

CDB/Fast Copy can make up to eight image copies in one pass of table space because less clock time is used with a minimum amount of central processing time and data integrity. CDB/Rexx is a full-function programming interface between DB2 and Rexx. Users receive interfaces between Rexx and DB2 Commands and DB2 Trace Records.

Pricing for CDB/Fast Copy starts at $12,500, and CDB/Rexx starts at $10,500.

CDB Software
Suite 120
6464 Savoy Drive
Houston, Texas 77036
(713) 780-2382

Tone Software Corp. has announced the Data Base Control Center (DCC).

The DCC is a control package designed to manage DB2. It consists of three components: DCC-Assist, DCC-Compact and DCC-SQL. The components work together to create a DB2 system management environment. DCC-Assist is a workbench tool that features object creation and modification, catalog queries, authorization control and a utility generation tool.

According to the company, DCC-Compact provides average compression rates of 50% to 80%, and it minimizes the access path length. DCC-SQL avoids using compile, linkedit and bind steps during the preprocess, and it can edit and test dialogs while still in the ISPF/PDF, which results in immediate feedback.

Prices range from $20,000 to $85,000.

Tone Software
1735 S. Brookhurst
Anaheim, Calif. 92804
(714) 991-9460

System Industries, Inc. has introduced the Raider's Edge disk subsystem.

The product is a redundant arrays of inexpensive disks technology subsystem for the Digital Equipment Corp. VAX environment. Raider's Edge is designed to solve I/O performance and data availability problems. According to the company, a key feature is ease of integration into VAX systems.

High-data availability is accomplished by a data-checking algorithm and parity scheme. Application processing can continue without any interruption if a single drive fails because the failed drive is hot-swapped, and the new drive is automatically brought up to full operation.

Raider's Edge is available with capacities of 1.8G or 3.3G bytes, and users can add capacity when needed. It comes with the company's monitor sofware, which constantly monitors the conditions of the Raider's Edge internal drive and allows operators to access the subsystem's configuration and diagnostic menus.

Pricing for the Raider's Edge subsystem starts at $36,000.

System Industries
1855 Barber Lane
Milipitas, Calif. 95123
(408) 432-1212

By now, your office workflow problems should be a thing *of* the past, not *from* the past.

Since the dawn of civilization, people have been passing information on everything from stone tablets to scroll parchments. Fortunately, we've come a long way from the days of routing stone tablets. But even modern paper carries with it many of the same intrinsic processing problems as stones.

Today there is a solution...it's called the FileNet® WorkFlo® Business System. With WorkFlo, digitized document images replace paper and your personal computer becomes an extension of your desktop, integrating mainframe data, PC applications, and images into the work process.

WorkFlo automatically links, prioritizes, and manages the storage, retrieval, processing, display, communication, printing, and routing of all the information required to process your work.

Put FileNet to work for you. Our installed base of more than 500 systems in production applications in 18 industries underscores why imaging is one of the most strategic technologies of the '90s. Call Ray Brown at (714) 966-3900 or write FileNet Corporation, 3565 Harbor Boulevard, Costa Mesa, CA 92626 for a free 16-page brochure on "Integrating Your Information Resources."

FileNet
The Imaging & WorkFlo Company

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508 879-4700
with your computer/modem

REACH OUT AND ACCESS EVERYTHING

EDA/SQL FROM INFORMATION BUILDERS: The Industry Standard Client/Server Solution That Lets Any Tool Access Any Data, Non-Relational or Relational, From Any Desktop.

INACCESSIBLE DATA IS USELESS

You've spent a lot of years and a ton of money building up the databanks you need to call on regularly to help run your business.

But, can you access your data fast when you need it?

Even worse, if it's on an incompatible platform, can you access it at all?

Chances are the answer is no.

HOW BIG BUSINESS LOOKS AFTER BUSINESS

Happily there's another answer to the problem. It's called Enterprise Data Access (EDA/SQL) from Information Builders. The people who specialize in distributed information systems.

EDA/SQL extends the reach of desktop solutions. It enables virtually any application or end-user tool that supports SQL to transparently reach any data in non-relational database files from any workstation.

REACH OUT AND RETRIEVE

With so many SQL tools integrated with many of the proprietary databases, you need a standard method of access with the power and flexibility to extend their range across distributed, multivendor systems environments.

EDA/SQL lets you do it — and with both relational and legacy data systems, so your investment in all of your existing data is future proof.

Nothing else delivers this universal, flexible, access capability in the day to day management of all your company's data.

So when you need to reach data, regularly, quickly, and regardless of platform, there's only one company to call.

Information Builders, the distributed information systems specialist.

For more information on EDA/SQL and how it can solve all your data access problems or to attend a FREE Seminar...

Call 800-969-INFO

In Canada call 1-416-364-2760

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European standard grabs fancy of key U.S. players

BY GARRY RAY
CW STAFF

An emerging European standard for computer-aided software engineering (CASE) could play a prominent role in the U.S. by 1994, according to participants at CASE '92, an industry convention held earlier this month in Montreal.

Attendees also said the standard could provide an alternative to other CASE environments such as IBM's AD/Cycle.

The standard, the European Computer Manufacturer's Association Portable Common Tools Environment (ECMA PCTE), offers a nonproprietary framework for integrating CASE tools and data from a variety of vendors.

ECMA PCTE IS a CASE environment standard that is designed to integrate and control compliant application development tools.

"What people are looking at is having a bunch of tools, which they can integrate, and at moving data from project to project," said Michael Kearns, a senior staff analyst at New Technology, Inc., a Huntsville, Ala.-based contractor for NASA. "Proprietary standards" — such as IBM's AD/Cycle — "aren't easy for tool vendors to live with," he said.

ECMA PCTE is a CASE environment standard that was designed to integrate and control compliant application development tools and that defines how data integration and sharing could be achieved among those tools. For example, analysis and design tools, project managers, version control programs and data repositories could all be integrated within a PCTE environment.

Fast mover

"PCTE is one of the big moves gaining acceptance in the United States," said Jacky Estubilier, a researcher at the National Center of Scientific Research in Grenoble, France. "I was surprised that acceptance was so strong" at the conference, he added.

CASE suppliers are embracing PCTE as a means of providing underlying tools and services that they currently must build on their own, such as data management and data distribution services.

Nicholas Wybolt, director of engineering at Providence, R.I.-based Cadre Technologies, Inc., said maintaining services such as windowing and data management across multiple platforms "had diluted our efforts" in improving the company's Teamwork CASE tools. Cadre announced in December that it will make Teamwork compliant with PCTE by 1994.

Another sign of the standard's growing momentum in the U.S. was a formal endorsement by Digital Equipment Corp. DEC, which had previously supported portions of the PCTE standard in its Cohesion CASE environment, announced that it will begin working with Austin, Texas-based International Software Systems, Inc. to design an "architectural definition and implementation plan" for ECMA PCTE, a company spokesman said.

That threw into question the company's commitment to a competing scheme called A Tool Integration Standard (ATIS). ATIS is the core integration component of DEC's Cohesion CASE environment.

A marketing victory

According to K. C. King, manager of technology transition at the Boeing Stars Project in Arlington, Va., "There's no doubt that PCTE has won the marketing battle." Boeing and DEC have been development partners in the Stars project. A DEC spokesman characterized ECMA PCTE as "complementary" to its existing ATIS implementation.

IBM was also expressing support for the European standard with its private demonstration at CASE '92 of a prototype CASE framework based on ECMA PCTE. "IBM has the first [ECMA PCTE] prototype in the world," Estubilier said.

IBM has consistently stated that its PCTE efforts will be targeted toward technical CASE environments, such as its AIX SDE Workbench/6000, which runs on RISC System/6000 workstations. At the conference, IBM representatives characterized questions about the impact of PCTE on AD/Cycle as "political issues" that they declined to discuss.

Make way for CASE generation

State agency in Ohio replaces 20-year-old benefits system using Pacbase

BY KIM S. NASH
CW STAFF

COLUMBUS, Ohio — It won't get a gold watch or a nice plaque, but the 20-year-old benefits system at the State Teachers' Retirement System (STRS) of Ohio is being retired. Replacing it is an agile set of applications built with integrated computer-aided software engineering (CASE) tools.

But the birth of the CASE-made system, dubbed Legacy, was a pricey, sometimes painful four-year ordeal.

The $13.5 million project "caused a total transformation of our IT center," said Robert Bowers, deputy executive director for administration at STRS.

Reduces paper chase

Those involved agreed that the new system lets benefits counselors spend about 30% to 40% more time advising clients during a typical meeting, rather than running down missing paperwork. Linda Sampson, a member services counselor who advises teachers on how to set up retirement funds, said she can do tasks with Legacy that she could not do with the old system.

For example, "what-if" analysis is now possible. Previously, "I could see a teacher's account only in current form," Sampson explained. "Now I can work out different scenarios on-line, literally in minutes." Clients can quickly make decisions about their golden years by studying previews of changes to factors such as amount of annual contribution or type of service.

ON SITE

Linda Sampson

State Teachers' Retirement System of Ohio
Columbus, Ohio

- **Challenge:** To revamp entire 1,000-program teachers' benefits system with an eye toward scrapping existing Bull mainframe within two years for an open platform.
- **Technology:** CGI Systems' Pacbase integrated CASE tool set.
- **Result:** Easily modified and ported system that the state of Ohio plans to sell to other sources.

The transition was anything but quick, however. In 1988, Ohio's teachers' retirement group realized that its monolithic benefits application — running on two 8000 series mainframes from Bull HN Information Systems, Inc. — badly needed an overhaul. The system, which will run until December when Legacy moves from pilot stage into production, lacks documentation. Plus, the four benefits areas that it tracks are not integrated.

That means, as Bowers put it, "maintenance can be a nightmare, and never mind doing enhancements."

The right ingredients

The lure of easier caretaking and built-in hooks to make modifications easier drew STRS to CASE. The Bull boxes, which Bowers said he will ditch within two years, actually simplified the decision of which CASE products to buy. CGI Systems, Inc.'s Pacbase was the only integrated workbench at the time that supported Bull's proprietary operating system, according to Bowers.

"What clinched it was that Pacbase also gives us the ability to migrate the applications to other platforms later on," he added.

The $150,000 to $300,000 product can generate code for IBM MVS and OS/400, Bull, Unisys Corp., Digital Equipment Corp. and Hewlett-Packard Co. environments and various versions of Unix, among other operating systems.

"Whatever we eventually decide on, we're covered," Bowers said.

However, it was after that initial buying decision that the trouble started. The state hired a Big Six accounting firm to analyze

Continued on page 72

Xpediter 6.0 debuts from Compuware

BY JOHANNA AMBROSIO
CW STAFF

A new release of a debugging tool from Compuware Corp. allows mainframe programmers to debug both on-line and batch applications, a capability that previously required two separate software packages.

Compuware said that at least 50 of the 650 users of Xpediter 6.0 have bought it to replace another vendor's product.

Two of those are Centerior Energy Corp. in Cleveland and The Acacia Group, an insurance concern in Washington, D.C. In both cases, the users jettisoned Intertest from Computer Associates International, Inc.

Centerior had been using both Intertest and an earlier version of Xpediter, according to Daniel Rose, a systems analyst at the electric services company. But the newest release of CICS, Version 3.2, could accommodate only one symbolic debugger. Xpediter was selected because it tested out to be "friendlier" than Intertest and more intuitive to a programmer, he said.

Production possibilities

Centerior plans to have Xpediter 6.0 in production by early next month, Rose added.

Acacia has been using Version 6.0 since March and had also been using Intertest, systems specialist Matthew Roswurm said.

"We were getting ready to do a CPU upgrade, and we didn't want to pay the upgrade fee for Intertest," Roswurm said. Because Xpediter 6.0 can now handle very large files, he said, Acacia made the switch over to using Xpediter exclusively.

Roswurm said he likes the "cleaned up" interface over the old Xpediter version and that the new version is "much more on-line-oriented." Acacia is using Xpediter to convert to a new insurance application package, he said.

Xpediter 6.0, which runs under MVS and VSE, also added support for DB2 and expanded its support for third-party applications. It is available now, and pricing ranges from $25,000 to $49,000.

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As for maintenance, a Gartner Group study showed that, even back in 1990, more than 80% of IEF developers were getting gains of from 2-to-1 to 10-to-1.

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The kit is priced at $10,000 (limit one per customer company). That's about one-half the regular cost of the toolsets.

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Government purchasers, please reference GSA #GS00K92AGS5530

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Director, CPC/CPPC Information Systems
SONY Corporation

"We used an IEF frequent flyer template to build our 'Canadian Plus' system. A major redesign, estimated at 4-6 months using previous methods, took less than a month. Now we're providing better customer service, and maintenance costs are greatly reduced."
Bill Palm
President, Canadian Technology Services
Canadian Airlines

"Our new Customer Order Services Marketing Information System—over 500 transactions and 250 entities—is in production. Quality is excellent and our users are very pleased. Dedicated people armed with the IEF advantage have made COSMIS a success."
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First Federal Lincoln

"The IEF tutorial is very well done. I feel comfortable with this software and I have acquired the skills to build simple systems. The tutorial is a very fast and effective means of evaluating the capabilities of the IEF."
Margaret Kubaitis
Research Programmer, IS&S
University of Illinois

"The IEF tutorial is put together very well and quickly illustrates how to construct a system using the IEF. It gives one the basics to start getting the job done. I feel I am prepared now to build simple systems using the IEF."
K. E. Peacock
Data Administrator
City of Saskatoon, Saskatchewan

Make way for CASE generation

CONTINUED FROM PAGE 69

existing business procedures and design a new system. After several months, the IS group decided the relationship "wasn't profitable for us" and dismissed the firm, which Bowers declined to name. Nor would he specify the problems that prompted the break, except to say results were slow in coming and sometimes looked like they would not appear at all.

So Ohio looked to its 60 users for help. A committee, headed by Sampson, was formed to advise IS on what the system should look like and how it should work.

Her greatest challenge, she said, was not translating techno-speak into user terms, but keeping users interested in the project. "Four years is a long time to work on something without seeing it," she observed.

The committee used joint application development-style methods to get IS and end users working together. The give-and-take gave users a sense of ownership in the project, Sampson said.

After three years of drawing blueprints, STRS was ready last year to begin building programs. But complete Pacbase training would have taken too long and prevented several in-house programmers from doing their regular work, Bowers said. So the state sought out a small, local consulting firm for help: Claremont Consulting in Oakbrook, Ill., which specializes in Pacbase and Texas Instruments, Inc.'s Information Engineering Facility.

Claremont sent in 35 programmers and analysts to work with STRS' user committee and 15 IS personnel. CGI also provided a few consultants. A year later, Legacy is nearing completion and parts of it are already in limited use at STRS. The state of Ohio plans to officially install the first piece, Member Benefits, in December, with a Pensions module to follow.

CASE "is the way to go," Bowers said, "but you pay a price for it in training and re-orienting your programming staff." However, the experience has improved the way IS operates, he added.

Retirement money

A price of $13.5 million might seem like a lot to spend on a software development project. However, the new 1,000-application system encompasses nearly every task STRS handles, according to Robert Bowers, deputy executive director for administration. "It's not just a core application. It's the total of what we do," Bowers said.

That cost includes software and hardware, including CGI's Pacbase and a turnkey relational database from Teradata Corp. But the biggest expense was people, Bowers estimated that staff salaries, outside consulting and in-house training made up more than half of the $13.5 million.

The state plans to recoup some of the money spent by peddling Legacy to other state and municipal retirement funds. STRS and Claremont Consulting formed a new company for that purpose: Claremont Retirement Technologies, Inc. in Oakbrook, Ill.

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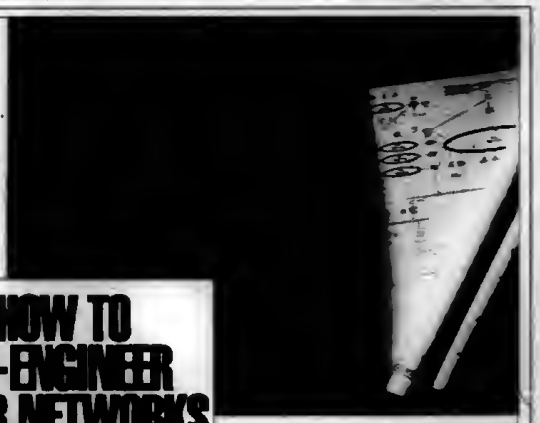

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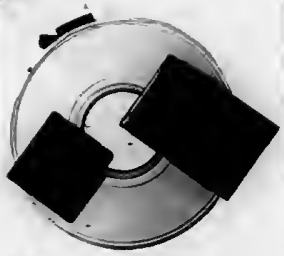

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IN BRIEF

IBM, Easel eye Asia

■ **IBM** signed a marketing agreement with **Easel Corp.** to sell its development products in Asia. Easel/2 2.0 will be available in a double-byte character set to let developers in Japan, Korea and Taiwan build applications that incorporate their native language.

■ **Objectivity, Inc.** in Santa Clara, Calif., recently announced an integrated graphical environment designed to assist in the development of object-oriented databases and applications based on **Digital Equipment Corp.**'s DEC Fuse application development environment.

Called Objectivity/DB, the software is an object-oriented database management system that is primarily designed for use in technical and engineering applications. The software incorporates standard C++ and is also available on **Sun Microsystems, Inc., Hewlett-Packard Co.** and **IBM** RISC System/6000 platforms.

■ **Softool Corp.** in Goleta, Calif., and Beaverton, Ore.-based **Cadre Technologies, Inc.** have joined forces to integrate Softool's change and configuration management program, CCC/Manager, with Cadre's Teamwork, a group of software development tools.

■ France's **Sapiens International Corp.**, whose U.S. office is in Cary, N.C., will supply $2 million worth of application development tools to **Manpower France**, a unit of employment agency Manpower, Inc.

NEW PRODUCTS

Application development tools

Beck Computer Systems has announced RMSEDT Version 3.1 for use on the Digital Equipment Corp. VAX/VMS.

RMSEDT is a VMS software tool that lets users interactively inspect, modify and report on Recovery Management Support (RMS) files. Regardless of file organization, record layout or record length, users can access any RMS file.

Enhancements include performance improvement of up to 300% when executing indirect command files and compatibility with Cobol and dBase IV, the company said.

RMSEDT Version 3.1 also supports a new data type called HEX string that allows users to inspect and input data in hexadecimal format, the company reported.

RMSEDT license pricing ranges from $950 to $7,950.

Beck Computer Systems
5372 Long Beach Blvd.
Long Beach, Calif. 90805
(310) 428-2894

Cortex Corp. has introduced Version 5.0 of CorVision, a repository-based application generator.

By producing commercial applications in the ANSI C source code, this version supports a range of computer platforms. Users can build client/server applications using MS-DOS or Microsoft Corp.'s Windows-based personal computers as clients with a number of Unix servers, according to the company.

Version 5.0 applications are implemented using industry standards including IEEE Posix, Transmission Control Protocol/Internet Protocol and SQL.

A typical entry-level configuration of CorVision costs $35,000.

Cortex
100 Fifth Ave.
Waltham, Mass. 02154
(617) 622-1900

Dragonfire Software Systems has released Version 1.0 of the PC/Cobol Toolkit, a set of library routines.

The product is designed for users with PC/Cobol compilers based on the Micro Focus Cobol/2 Compiler. Features such as callable routines that verify disk and printer status, perform screen I/O, retrieve directory listings and shell out to DOS are included.

The tool kit also provides a number of copybook files for use in the programmer's code.

The PC/Cobol Toolkit costs $50 without the source code. The source code with tool kit costs $100.

Dragonfire Software Systems
14407 Cypress Falls
Cypress, Texas 77429
(713) 870-7966

Software Artistry, Inc. has released Version 3.2 of Application Software Expert, a cross-platform, rapid application development and expert systems tool.

The product is composed of a fourth-generation language, a block structured procedural language, an expert systems inference engine and user interface objects.

Multiple database management system access capabilities have also been added to this release.

Version 3.2 offers user interface objects, including pull-down menus, calendars, spreadsheets and tabular database browsers.

Application Software Expert Version 3.2 is priced from $3,000.

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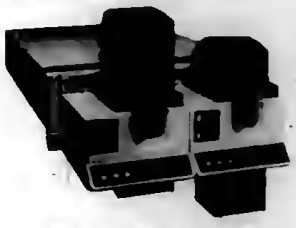

to the IBM AS/400 user. These choices include 18-track cartridge, 8-mm cartridge and reel-to-reel tape subsystems that make back-up both easy and cost-effective. Our new 9336-compatible DASD subsystems offer levels of performance and reliability never before available to the AS/400 user. Each features optional hot-spare technology for data protection and cache technology for high performance.

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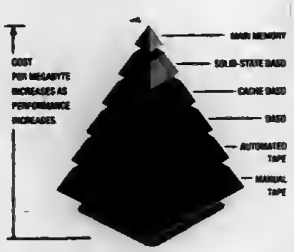
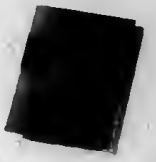


To find out more about the new XL/Datacomp line of storage devices, or the ways you can put DSM to work to improve the access and cost-effectiveness of your data storage, call for the FREE booklet "Guide To Effective Data Storage Management."



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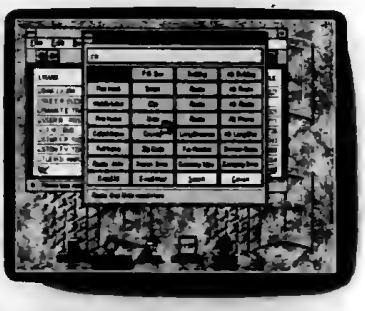
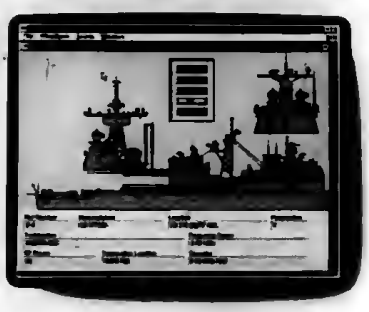


CHEVRON

Chevron's LAN system clients asked for a PC-based corporate directory to give PC users a "phonebook" similar to the one on their mainframe. The problem was there was no solution on the market that could accommodate 45,000 records with 30 fields each. To solve their problem, they used Visual Basic,™ MicroHelp Muscle for Visual Basic, VBTools, EditTool, ButtonTool, and Ramia Data Manager to create CLSctn for Windows. Now the users have an easy-to-use directory that allows them to access information by several different indexes.



U.S. NAVY

Navy ships were drowning in paper. The Chief of Naval Operations has estimated that it was costing $400 million per year to store, access, control and update the vast amounts of required technical information. Using Microsoft C, the Windows SDK, Microsoft Word for Windows and Excel, they developed the Interactive Electronic Technical Manual. It allows them to store all of the volumes of technical information on a CD-ROM, which can be accessed with the click of a mouse.

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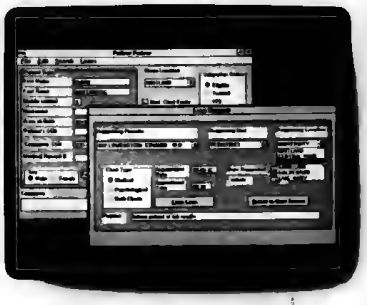

Orlando Health Care Group

Orlando Health Care is a 52-physician practice providing HMO services at 6 medical facilities. They had a problem tracking and updating over 100,000 medical charts, because patients can receive services at any of the facilities. So they used Microsoft Visual Basic, Q+E™ Database Library, Microsoft SQL Server, Microsoft LAN Manager, and Select Comm Server to create the Master Patient Index, a systemwide database. The new system saves time and helps the company provide better quality health care.

PHH Fantus

As an economic development consulting company, PHH Fantus analyzes enormous amounts of data. Some of their studies require the analysis of over 450 industries, and with the old manual system, it could take over 200 man-hours. To make their operation more efficient, they used Microsoft C, the Windows SDK and db VISTAIII Database Management system to design "Forté," a giant repository for data on a network server which is continually maintained and updated. Analysis that once took weeks now takes just hours.

Ansett Australia

As an airline, Ansett Australia needed to provide a better information system for its users. The old system forced users to wade through a large printed book for flight information. To solve this problem, they created the Ansett Travel Planner, with Microsoft Visual Basic, Windows SDK, Microsoft BASIC Professional Development System. Now it's much easier to update and access flight information. And there's a database that can store travel preferences for customers.

Otis Elevator

Senior Management needed a more accurate and timely way to consolidate all the financial information that was coming in from Otis companies around the world. So they used Microsoft C and Microsoft Excel along with Bridge Tool-Kit™ and Keyworks to create CFO, an executive information system. Now the analysts and executives can quickly access important data that'll allow them to spot and react to business trends.

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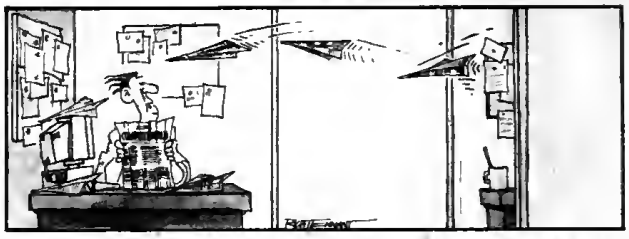

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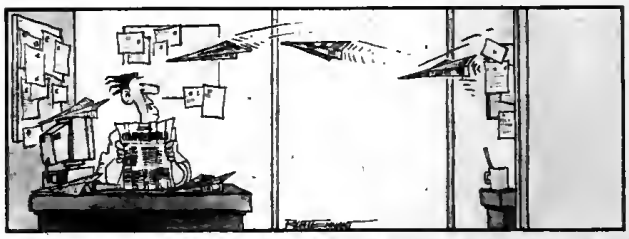

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The new word processors: More than you may ever need

Loads of accessories and functions don't always translate into a great deal

BY ALAN RADDING

How are the new word processors like political candidates? Both claim to do almost everything; both are attempting to trounce their competitors at every turn; and it's very possible to get too much of both of them.

If you have seen any of the latest word processors, you get the idea: They include a little bit of many specialties, such as desktop publishing, presentation graphics and spreadsheets. DOS word processors now sport a graphical look and feel, and even Unix is gaining a more personal computer-like image.

And the features keep on rolling. One vendor may pull ahead with a new gadget but never fear — the others will be close behind. This is especially true in the Windows world, where **Lotus Development Corp.**, **Microsoft Corp.** and **WordPerfect Corp.** are in a constant game of leapfrog.

Lotus recently jumped ahead as top frog with its latest release of Ami Pro 3.0. It now provides drawing capabilities within the program, multiple rows of "one-click icons" and more file formats, style sheets and on-screen fonts. Before that, Microsoft Word had been regarded as offering the most functions and being the most intuitive, says Bill Kesselring, an industry analyst at Dataquest, Inc. in San Jose, Calif. With all the action at WordPerfect, there's little chance of any status quo taking hold.

No guarantees

Some of these features are impressive, but across the board, the newest generation of word processors doesn't entirely replace the packages from which they borrow their features and functionality. These whiz-bang features also don't guarantee increased productivity.

The most touted features — what-you-see-is-what-you-get (WYSIWYG), desktop publishing and graphics — all come with their frustrations (see chart page 78). For instance, desktop publishing features can sometimes get in the way of efficient word processing.

"I can write and edit in page layout mode, but it is really too distracting and too slow," says Ralph Valente, a communications specialist/copywriter in the advertising department at Liberty Mutual Insurance Co. in Boston. Valente writes sales brochures on an **Apple Computer, Inc.** Macintosh running Word for the Macintosh but turns the disk over to the art staff for layout with **Aldus Corp.**'s PageMaker.

Still, there are features to get excited about, such as one-click icons, macro recorders and extensive file importing (see chart page 78).

John Gerson

Larger issues

So you can watch the race and place your bet, or you can take a more long-term approach: Choose the package according to concerns larger than mere features and functionality.

For one thing, so much depends on which other packages — spreadsheets, electronic mail or databases — the word processor can interoperate with. This is especially true in the Windows world, where Microsoft, Lotus and WordPerfect are all trying to come out with closely coupled product portfolios.

These product lines — actually suites of Microsoft Windows-based applications — promise tightly integrated features such as Object Linking and Embedding (OLE) and Dynamic Data Exchange (DDE), consistent operation and look-and-feel from program to program and greater assurance of Windows compatibility (no unrecoverable errors) among the applications.

Of the "Big Three," Microsoft Word is regarded as taking the best advantage of Windows. However, Lotus is catching up fast with its own suite of Windows-based products, including 1-2-3 and Freelance.

The degree of DDE and OLE support plays an important role here. With DDE, data from a spreadsheet can be inserted into a word processor. At a later date, if the data changes in the spreadsheet, it will be updated when the word processing document is opened.

OLE takes DDE a step further. Here spreadsheet data can be inserted into the word processing document. If the user clicks on the spreadsheet data, it opens the spreadsheet program, giving full spreadsheet capability within the word processor.

However, some consider OLE overrated. For instance, it is still difficult to implement. Even in Word, OLE is far from intuitive and can produce some spotty results.

Just when you think you may want a Windows word processor, think again: These packages can easily overburden your PC. In OS/2 and Unix as well, all the new functionality takes its toll on CPU, memory and storage. The programs are large, running from 5M to more than 10M bytes. On an Intel Corp. 80386 33-MHz machine with 8M bytes of memory and 200M bytes of storage, the Windows products

Continued on page 78

Radding is a free-lance writer based in Newton, Mass.

INSIDE

In Search Of a 10
Two users and their hunt for the ideal word processor. Page 78.

Bargain Or Bust?
No-frills versions get letters out without distractions. Page 79.

Take Your Pick
DOS, Unix, Windows, Mac and OS/2 packages. Pages 80-81.

Features and more features

Graphics and productivity features are the areas of concentration for the newest packages

WYSIWYG page preview: All the latest products let you view the page before printing to check placement of titles, graphics and other elements. However, even the best WYSIWYG is not perfect, and there can be discrepancies between what you see on the screen and the actual output.

WYSIWYG editing: The newest Windows word processors allow you to edit in WYSIWYG mode. However, editing is slow and can be difficult, especially when reading narrow, lowercase letters such as "i" or "l."

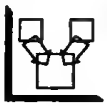
Layout: Layout capabilities vary, from the basic (combining text and graphics in a frame) to the sophisticated(wrapping text around odd-shaped graphics). None yet have the precise control and productivity features of full-powered desktop publishing systems.

Import, move, size, rotate and crop graphics: Most high-end packages allow you to import graphics from other packages and position and resize them in the document.

Drawing capabilities: A few products either have a drawing capability or incorporate an existing drawing package. Ami Pro offers drawing capability within the document. None yet matches the best stand-alone drawing programs.

Drag and drop: Windows-based products allow you to define and move text with the mouse rather than requiring you to go back to the "edit" menu and click on the cut-and-paste options.

One-click-function icons (also known as "smart icons" and "button bars"): This feature allows you to just click on a single icon to perform a function rather than going to the menu and making several clicks of the mouse. Some packages allow you to customize icoos or move them anywhere on the screen.



File importing/conversion: Windows products, in particular, offer extensive support for multiple data formats. Be warned that file conversioo can slow down performance, and not everything converts well.

Macro recorders: These allow you to automatically reduce a series of keystrokes or mouse clicks to a single command. You can also turn the macro into a customized button. For complex, interactive tasks, however, you will still have to program the macro using a command language.

Automatic envelopes: Most word processors now provide a choice of envelope formats that can be called up with a keystroke or two. Ami Pro's most recent release, 3.0, goes one step further by automatically taking the inside address from the letter and placing it in an envelope format.

Style sheets: All word processors allow you to customize style sheets, rather than having to create formats and layouts from scratch. The latest Ami Pro version and Word for Windows come with dozens of ready-made style sheets.

In search of the perfect word processor

For choosy users, it always seems as though the ultimate word processor is awaiting them in a new release.

Smarts. Ease of use. And a dual license that allows him to run a copy on his portable. That's what Kevin Grantham, director of marketing at Westronic Systems Corp. in Richardson, Texas, can't seem to find in a word processor. He has tried **WordStar International**'s WordStar, **Microsoft**'s Word 4.0, Mass 11 (a VAX product that also runs on the PC) and **Lotus**' Manuscript.

What he says he wants is a word processor "that knows how documents are put together." Manuscript had smarts, he says. Unfortunately, it had a difficult interface.

Mass 11 was very powerful, but the license was a problem, and it "was impossible to learn," Grantham says. He was "blown away" by the style sheets in Word, but he didn't like the fact that he had to exit the program to get graphics. Ami Pro let him draw right in the program, but it wasn't intuitive. Now that Ami Pro Release 3.0 promises to do things such as automatically place the inside address on the envelope, Grantham says he may be able to stop searching.

If you can't find what you want in one package, why not use two? That's what Bohdan Zachary, a TV producer/director at North South Films in San Francisco, is doing. He switches between Word for Windows and Word for DOS, depending on his needs.

Zachary never wanted to abandon his original word processor, WordStar. But as WordStar failed to keep pace, Zachary was forced to shop around. Now that WordStar has announced Version 7.0 for DOS, Zachary's hopes have been raised. "I keep reading good things about WordStar 7.0." If they're true, he can return to the package he knows and likes best.

ALAN RADDING

The new word processors

CONTINUED FROM PAGE 77

ran noticeably slower than the latest DOS counterparts. From loading the program to cutting and pasting to the spell checker, performance lagged.

If, as the analysts say, typical users only use about 10% of the features, they may be carrying a lot of extra overhead from which they will rarely benefit.

That's why a lot of people may turn to the now-graphical DOS packages, such as the latest DOS products from **WordStar International, Inc.**, WordPerfect and Microsoft. All now feature mouse support and pull-down menus. All have desktop publishing, editing, formatting, font and graphics features that come very close to the Windows products while at the same time delivering faster performance.

Lacking a few functions

Where they fall short is in Windows-specific features; they do not support DDE and OLE, for instance. They also still cut and paste rather than drag and drop text; they don't let you edit text in WYSIWYG mode; they don't have one-click icons; and they don't support more than two windows on the screen at a time.

Some WordStar users prefer Release 7.0 over the Windows version because it retains more of the original WordStar features while adding almost everything in the Windows version. "WordStar 7.0 gives you almost all the features, but they didn't screw anything up to do it," says Robert Bloom, chief at the U.S. Army International Material Evaluation Division in Aberdeen Proving Ground, Md.

The bottom line is that Windows may be the most obvious and sexy option, but it is not the only one, as there is increasing activity on other platforms (see charts pages 80 and 81).

As in other areas of life, new is not always as wonderful as it appears. That goes for word processing as well: Despite graphical interfaces, the systems are not intuitive. Yes, it's a lot easier to click on a paragraph and change its format or drag some copy from here to there. But no amount of pull-down menus, mouse control, on-screen Help, style sheets, built-in macros, one-click icons, drag-and-drop and other ease-of-use features will enable you to absorb all the new features, from math capabilities to fonts. One leading word processor has seven sets of button bars — it's easy to lose track of which one you're using.

Some ease-of-use features are also proving to be performance bottlenecks. Take the mouse, for example. Some of the best features in these word processing programs are mouse-dependent, which can slow a fast typist. Of the Big Three, Ami Pro suffers the most without the mouse.

The thing to keep in mind is that you don't want to overload. Most people would like to be surrounded by their favorite belongings on vacation, but do you really want to lug them around the airport?

Whichever way you go, you almost can't go wrong. Unlike a political election in which the best candidate increasingly appears to be "none of the above," when it comes to choosing a word processor, any of the above will do the job well. •

Take a walk on the 'lite' side

BY LYNN HABER

Sometimes, you can just get too much of a good thing. For these times, there is a "lite" choice. About a half-dozen popular word processing vendors offer no-bells-and-whistles versions of their software, sometimes referred to as executive word processors. At this point, according to one vendor, the low-end variety accounts for about 10% of all word processors sold.

WHAT YOU GET: Basic editing tools, text manipulation, basic formatting capabilities such as margin setting, small tables and graphics placement, a rudimentary spell checker and a grammar checker.

A limited number now have improved performance and formatting capability as well as better design efficiency, including mouse support and Microsoft Corp. Windows capabilities.

If you stay away from the Windows versions, you'll require less memory and disk space than with fully functioned word processors, with a minimum of 640K bytes of random-access memory and 1M to 5M bytes of disk space.

You'll also be able to go from loading the package to printing a document in a half-hour, vendors estimate.

WHAT YOU DON'T GET: You won't get graphics with pizzazz, advanced editing tools or very much memory. Lite products usually have limited file compatibility as well. You also give up large charts, the ability to overlay text on a graphic, font support, full-blown grammar and spell checkers and tabling capabilities. You can get a dictionary of about 200,000 words but not a thesaurus. Desktop publishing features are limited.

Another drawback is that "lite" may force an organization to support more than one word processor.

PRICE RANGE: $49.95 to $249.

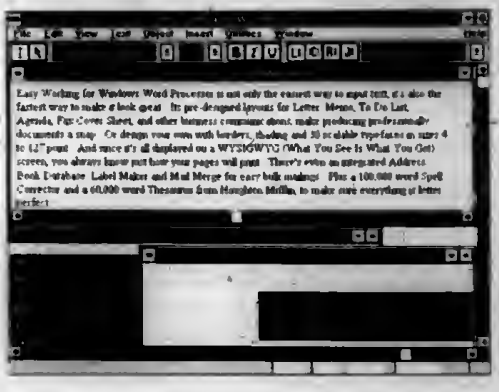
COMMON USE: People use lite packages when they need to get out simple, short documents or notes quickly. Others use lite versions of a higher end package on their portables because they require less memory. Some firms, such as Trustmark Bank in Jackson, Miss., are making the best of both the high-end and the low-end worlds.

USER COMMENT: Leigh Johnson, an information analyst at Trustmark, says the bank has standardized on WordPerfect and LetterPerfect, a high-end and low-end solution, respectively, from **WordPerfect Corp.** More than 50 branch offices use the low-cost LetterPerfect for creating simple one-page documents, while anything outside the branch offices is done with WordPerfect.

WHO MAKES IT:
- **Broderbund Software, Inc.**
(415) 382-4400
Bank Street Writer Plus ($59.95)
- **Lotus Development Corp.**
(617) 577-8500
Lotus Write 2.0 for Windows ($199)
- **Microsoft Corp.**
(206) 882-8080
Windows Write (included in Windows 3.0) ($149.95)
- **Software Publishing Corp.**
(408) 986-8000
Professional Write 2.22 for DOS, Professional Write Plus for Windows ($249)
- **Spinnaker Software Corp.**
(617) 494-1200
Easyworking for Windows and Eight-In-One for DOS or Windows ($49.95 and $59.95)
- **Symantec Corp.**
(408) 253-9600
JustWrite 2.0 ($249)
- **WordPerfect Corp.**
(801) 225-5000
LetterPerfect 1.0 ($149)

Haber is a free-lance writer based in Boston.

'Lite' word processing packages *such as Spinnaker's Easyworking for Windows offer features such as basic editing tools and formatting capabilities. However, they don't give you extensive graphics or desktop publishing capabilities.*



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A look at the new generation

DOS

Just because it's DOS doesn't mean it isn't graphical. DOS word processors now feature pull-down menus and mouse support. The most functional ones also offer layout and graphics, multiple fonts, WYSIWYG page preview and multiple window support. However, they do not support DDE, OLE or smart icons, and they still cut and paste rather than drag and drop text.

WordPerfect Corp.

WordPerfect 5.1
(800) 451-5151

RAM (full installation): 2.5M bytes.

Editing: Find-and-replace, macro recorders, style sheets, thesaurus, foreign language dictionary, undelete (last three deletions).

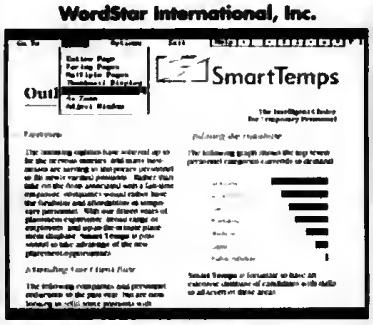
Layout: WYSIWYG page preview, 24 columns supported, automatic frame captions, automatic page numbering, landscape and portrait pages, kerning. Does not have: WYSIWYG page layout, movable rulers, frame layering.

Graphics: Moves, sizes, crops and flows text around graphics; creates frames for text and graphics; lines, boxes and borders; scaling and cropping. Does not have a charting module.

File conversions: WordPerfect, ASCII, all leading word processors.

Price: $495 single user.

WordStar International, Inc.



WordStar Release 7.0
(415) 382-8000

RAM (full installation): 7M bytes.

Editing: Find-and-replace, macro recorder, style sheets, thesaurus, foreign language dictionary, Undo functions, various paragraph styles, GOTO.

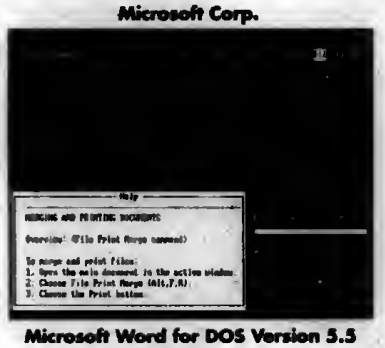
Layout: WYSIWYG page preview, eight columns supported. Does not have: WYSIWYG page layout, movable rulers, automatic frame captions, frame layering.

Graphics: Lines, boxes and borders; line and fill styles. Does not: move, size or crop graphics; flow text around graphics; provide frames for text and graphics; have charting module; do scaling and cropping.

File conversions: WordPerfect, Macintosh, ASCII.

Price: $495 single user.

Microsoft Corp.



Microsoft Word for DOS Version 5.5
(206) 882-8080

RAM (full installation): 3M bytes.

Editing: Thesaurus. Does not have: find-and-replace, grammar checker, foreign language dictionary, Undo.

Layout: WYSIWYG page layout and page preview, 22 columns supported. Does not have: movable rulers, automatic frame captions, automatic page numbering, frame layering, landscape and portrait pages.

Graphics: Moves, sizes, crops and flows text around graphics; lines, boxes and borders. Does not have: frames for text and graphics, charting module, line and fill styles, scaling and cropping.

File conversions: WordPerfect, Macintosh, ASCII.

Price: $450.

Other menu-based, graphical DOS contenders include: WYSIWYG Corp.'s The Universal Word (310) 215-9645; Quicksoft, Inc.'s PC-Write Advanced Level 4.0 (206) 282-0452; Xyquest, Inc.'s Signature for DOS (508) 671-0888; BrownBag Software's Mindreader (408) 559-4545; Dilworth Software's QS Version 3.0 (408) 624-6500; Trajectory Software, Inc.'s LEX Elite (201) 447-5200; Microsystems Engineering Corp.'s Wiziword 2.0 (708) 882-0111; Digital Equipment Corp.'s DECwrite (603) 884-3765.

UNIX

BBN Software Products
(617) 873-5000
BBN Slate
Price: $995 per user

Clarity Software
(415) 691-0320
Rapport
Price: $895 per user

Dilworth Software
(408) 624-6500
QS Version 3.0
Price: $795 starting price

Island Graphics
(415) 491-1000
IslandWrite, Draw and Paint
Price: $995

Digital Equipment Corp.
(800) 344-4825
DECwrite
Price: $1,200

Microsystems Engineering
(708) 882-0111
Wiziword 2.0
Price: $995

Trajectory Software, Inc.
(201) 447-5200
LEX Elite
Price: $495 starting price

WordPerfect Corp.
(800) 451-5151
WordPerfect 5.1 for X Window
Price: $495 per user

Unix word processing, which was traditionally kludgey and clumsy, has gotten sleeker, with offerings from **Island Graphics, WordPerfect** and others.

Island Graphics is the leading dedicated Unix vendor to bring personal computer-like advanced word processing to the Unix environment. Its package features WYSIWYG editing and WYSIWYG page layout, page preview, style sheets and extensive graphics capabilities, such as the ability to move, size and crop graphics, as well as various line and fill styles from which to choose.

A problem with Island Graphics' three-way integration is resource consumption — a full installation requires 40M bytes. "All three products are great, but they need a lot of memory," reports Glen Key, technical consultant at US West Communications, Inc. in Denver.

Key runs the Island Graphics products on a Sun Microsystems, Inc. SPARCstation with 28M bytes of memory, and it's a tight squeeze, he claims.

The product also does not support automatic macro recorders, cannot drag and drop text, has no charting modules and does not support E-mail standards.

BBN Software's and Clarity's packages are multimedia in style, combining text, graphics, image and sound. Other Unix packages were originally DOS-based and then ported to Unix.

WINDOWS

Windows is where much of the attention is focused. Only in this environment will you see features such as DDE and OLE support, one-click-function icons and drag and drop.

Microsoft's Word for Windows. Of the "Big Three," Word is widely regarded as taking the best advantage of Windows. It offers the largest number of features and also includes Microsoft's Draw. The program is extremely intuitive to use and will even translate WordPerfect commands into Word commands. $495, (206) 882-8080.

WordPerfect's WordPerfect for Windows. This is WordPerfect's first effort at Windows. It lacks built-in drawing and Object Linking and Embedding (OLE), but it handles imported graphics and supports more local-area network protocols than Word for Windows and Ami Pro. It also provides a very powerful file manager. WordPerfect for Windows preserves WordPerfect's "reveal codes" capability. $495, (800) 451-5151.

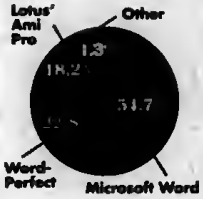
Lotus Development's Ami Pro 3.0. This most recent release provides built-in graphics and improved performance and now handles the largest number of file formats. The program also has some built-in intelligence, such as where to find the address of the recipient of a letter. However, it accomplishes this by doing annoying things, such as imposing its own file-naming system on the user. Lotus is catching up fast to Word's Windows support. $495, (404) 391-0011.

WordStar International's WordStar. WordStar is making a run at the Big Three by providing familiar features and commands for its user base. However, devotees will have to deal with much that is new. It supports OLE and Dynamic Data Exchange, what-you-see-is-what-you-get, built-in drawing and a fax modem format that preserves the document's layout and style. $119, (415) 382-8000.

The Big Three

Windows word processing is dominated by three contenders

(Based on 1991 market share figures)



Source: Dataquest, Inc.

Computer Associates' CA-Textor. CA is jumping into the ring with a midprice offering that doesn't attempt to provide all the features of the leading word processors. It boasts the standard features as well as a multilanguage (English/French) capability and also provides a library system that lets the user collect related documents in a single file folder. $225, (561) 342-6000.

Digital Equipment's DECwrite. DEC combines advanced Windows word processing features with DECwrite's traditional strengths, such as integration with its Compound Document Architecture, which allows users to combine text, graphics, images and other data types in a single document. It also comes as part of its Team Links, which provides a groupware-like document management system that allows multiple authors and editors to work on a document. $695, (800) 344-4825.

Also marketing: Spinnaker Software, Inc.'s PFS:Window Works, (617) 494-1200; DeScribe, Inc.'s DeScribe Word Processor, (916) 646-1111; Symantec Corp.'s JustWrite Version 2.0, (408) 253-9600.

For a full matrix chart of Windows word processors, see January 13, 1992, issue of Product Spotlight.

MACINTOSH

Microsoft Word dominates the Macintosh market, which includes four other major contenders

Claris Corp.
MacWrite II
(408) 727-8227
Price: $129

DeltaPoint, Inc.
Taste 1.02C
(408) 648-4000
Price: $149

Microsoft Corp.
Microsoft Word
(206) 882-8080
Price: $495

T/Maker Corp.
WriteNow 3.0
(415) 962-0195
Price: $249

WordPerfect Corp.
WordPerfect for the Mac
(801) 451-5151
Price: $495

There has never been a question of graphical user interface in the Macintosh world, of course. This makes all of these products heavily mouse-dependent. And here more than on any other platform, Windows products can significantly slow performance. Ted Page, senior copywriter at Polaroid Corp. in Cambridge, Mass., uses **Microsoft's** Word for the Macintosh. "It had abominable performance on my old Mac SE," he says. On his new Macintosh IISI, Word runs a lot better.

Claris' MacWrite II is a midrange product and lacks some of the most advanced functions, says Corporate Software, Inc., a major software distributor.

T/Maker Co.'s WriteNow is said to be something of a "sleeper," offering excellent performance and an interesting mix of high-end features, according to Jeffrey Tarter, publisher of the "Softletter" newsletter in Watertown, Mass.

Still, Microsoft Word is the one to beat. "You get WYSIWYG, and it is very easy to use. It has become the [unofficial] standard here," Page says.

OS/2

DeScribe is the only company so far to have built a word processor for OS/2 from the ground up

DeScribe, Inc.
DeScribe Word Processor
(916) 646-1111

Price: $495 server, $350 single user, $139 competitive upgrade.

Editing: WYSIWYG editing, macro recorders, thesaurus, spell checker and optional foreign language dictionary. Does not have drag-and-drop capability or smart icons, footnotes, tables and math functions.

Layout: Page preview, style sheets, automatic page numbering and movable rulers.

Graphics: Imports/Exports many text and graphics files, including ASCII, .DIF, .WKS. Does not include a charting module, clip art library.

OS/2 is attracting word processing vendors but at a much slower pace than Windows and DOS. Without fanfare, **Microsoft** released Word for OS/2 last month to bring the product in line with OS/2 2.0. And **WordPerfect** has a version that the company says is comparable to its 5.1 release. Few others have released OS/2 versions of their originally DOS or Windows products.

One reason why word processing for OS/2 has not been a big market is because it allows users to run DOS and Windows-based programs. "There really isn't much need for OS/2 word processors," says Jeffrey Tarter at the "Softletter" newsletter in Watertown, Mass. Dave Clancy, director of research and development at Logica North America in Waltham, Mass., adds, "We try not to do word processing on OS/2. We use it at the server level."

PET PEEVES

Each individual Windows file is larger than its DOS counterpart. A simple document containing only text, returns and tabs took up 5,046 bytes in WordPerfect 5.1 for DOS but required 11,131 bytes in Ami Pro 3.0.

The dialog box on Ami Pro 3.0's spell checker jumps around the screen to avoid covering the text in question. That means you have to keep moving the mouse to keep up with it.

With WordPerfect for Windows, it's nice that you can choose either the WordPerfect or the Windows keyboard. But if you choose the former, you sacrifice consistency across Windows programs. If you choose the latter, WordPerfect users will have to learn new function keys.

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Get thee to a PC!

Offloading application development from a mainframe to a PC promises cost and productivity benefits. But is it right for you?

BY MARK A. BUTTERLINE

Moving application development activities from the mainframe to the personal computer workstation will be the single most important technology change that most commercial information systems shops will have to address in the 1990s. They cannot overlook the power of the PC-based development tools (e.g., compilers, debuggers, database management system tools, teleprocessing monitor tools, CASE tools), which will greatly exceed the power of their traditional mainframe counterparts.

Nor can they overlook the economics of PC-based mainframe application development. Currently, productivity increases of 30% to 40% are achievable with an outlay of $10,000 to $20,000 per developer.

These productivity improvements and tantalizing costs, together with quality improvements, are the reasons most IS shops make the move to offloaded development environments.

These are desirable goals indeed. But before your IS shop plunges into offloading mainframe development, it must determine whether offloading is right for it. That means analyzing developer needs, assessing the impact of offloaded development on current IS roles and exploring which part of the development cycle fits best into the offloaded development environment.

Analyzing developer needs begins with examining the mainframe tools you have and how developers use them. This exercise is important because offloading mainframe development is mostly a question of mainframe emulation on smaller computers. You'll need to collect information on a wide range of tools: compilers, teleprocessing monitors, DBMSs, code generators, debuggers, utilities, statistical packages, etc.

You'll also need to find out how these mainframe tools are being used. In some situations in which a team is using a mainframe compiler that is fully supported on a PC workstation (such as IBM OS/VS Cobol), it may be using a DBMS that is not (such as IBM Model 204). If the number of modules that contain calls to the unsupported DBMS is small, use of an offloaded development environment may still be possible.

Skimping on the right components can make an offloaded development environment affordable. See page 84.

Next, you must find out more about your developers, typically through a survey, to determine whether to move to an offloaded development environment and who should become users in that environment.

The survey should extract the following seven points of information from developers:

1) Tool-use levels. By asking developers to rate their current level of use of specific operating systems, languages, DBMSs, teleprocessing monitors, mainframe utilities/tools, Unix utilities/tools and DOS utilities/tools, you can discern which areas will need the most attention when it comes time to select PC workstation counterparts. In addition to helping select workstation tools, these ratings, when performed both before and after deployment, are a gauge of the environment's effectiveness.

2) Function of potential users. The reason to identify the potential users' job titles (e.g., programmer, analyst, system tester) is that some functions are better suited to offloading than others.

The functions of programmer and analyst have the most to gain from offloaded development. Programmers are usually the main beneficiaries. Large chunks of programmer functions — coding, editing, syntax checking/compiling, unit testing and some string and system testing — can be moved to an offloaded development environment. Use of lower computer-aided software engineering (CASE) tools (e.g., code generators) in conjunction with upper CASE tools (those used from data or function analysis) can be very effective here.

For their part, analysts are likely to benefit from an offloaded environment because almost all upper CASE tools are PC-based and thus are natural candidates for inclusion in an offloaded development environment.

System testers can also gain some benefits from the offloaded development environment. Most of these benefits have to do with being able to use a more secure and robust set of tools, mainly PC versions of mainframe DBMS and teleprocessing monitors, than would normally be available on the mainframe. These robust tools enable users to do more rigorous or damaging tests than would be practical in a multiuser situation.

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Butterline is a senior specialist at AT&T. This article is based on his book, *From Mainframes to Workstations: Offloading Application Development*, published by QED Publishing Group in Wellesley, Mass. (Copyright 1992, QED Publishing Group.)

Philip Anderson

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These environments also give the individual the tools necessary to set up test databases without the assistance of other personnel, which can improve the productivity of the experienced tester.

3) Type of systems being developed. It is important to know whether users will be working on permanent systems that will be enhanced or maintained or whether they will be working on "throwaway" or ad-hoc systems. The information will have a direct bearing on the cost-effectiveness of the offloaded development environment.

Groups developing permanent systems will usually find more benefit than those developing throwaway ones because throwaway or ad-hoc report development typically involves more code reuse, less testing and fewer compilations.

4) Development life cycle position. Whether a potential developer's project is in the development, enhancement or maintenance part of the development life cycle will affect his selection as an offloaded development environment user. More on this later.

5) Expected work levels. Finding out what percentage of a developer's time over the next year will be spent on new development, continuing development or repair maintenance will establish whether he is a candidate for an offloaded environment. Developers that anticipate low work levels, such as only repair maintenance work, probably aren't appropriate. Users on projects that need large-scale enhancement on a regular basis are among the best candidates.

6) Critical system components. If converting the developer(s) of an existing system, it is important to identify which system components or modules must be fully functional in the offloaded development environment. You'd want to know, for example, that all critical modules could reproduce the same results with a PC workstation's debugger tool as on the mainframe. This data will be needed by the people who will select the workstation tools for the offloaded environment.

7) Interlanguage call (and other crazy interfaces) identification. The idea is to catch all insurmountable obstacles to the effective use of an offloaded development environment before you commit resources.

Development cycle issues

In terms of analyzing the survey, you'll want to determine whether your shop is one that is developing new applications or making significant enhancements to existing applications. Such shops have the most evident justification for offloading development because straight new

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Which costs to skimp on and how to do it

Focus cuts on PCs, never on servers

With the prices for CPU microprocessors and memory chips for the most part on the decline, it follows that PC workstation and server prices will also decrease.

Minimizing costs in the hardware area has therefore become a question of knowing where you can skimp on components and where you can't.

Skimping on the right components can make an offloaded development environment affordable to organizations that are short on money. Skimping on the wrong components can be detrimental to the success of the project.

Where to skimp

▶**PC workstations.** In most situations, it is not necessary to deploy the latest in PC workstation technology. For example, if you plan to use only character-based DOS tools in the forseeable future, then getting by with a 386SX with a color monitor and a 100M-byte drive may be acceptable.

However, if you plan to pursue the latest and greatest tools in the marketplace, a more powerful configuration may be required.

The important thing to note is that when a new CPU microprocessor is released, it usually takes a couple years for the software that can fully exploit the new microprocessor to be introduced.

By then, of course, a new generation of microprocessors may be available, and your PC will have been subjected to a lot of wear and tear and may not have much life left in it.

As a rule, get a PC workstation that you think can handle tools you will be acquiring during the next two to three years.

▶**Local-area networks.** When deciding which LAN to get, there are not only technical considerations but also cost considerations. Many LAN software packages run on multiple LAN hardware platforms, and the cost for these LAN hardware systems varies. Shop around.

A second cost consideration is the medium used to connect the LAN together. For example, IBM's Token Ring uses shielded twisted-pair. If your building is already wired with unshielded twisted-pair, then installing a product using shielded twisted-pair would be much more costly because of the expense of rewiring.

Depending on the age of your building, environmental costs associated with cutting holes in asbestos-filled walls may also come into play.

▶**Computer links.** When considering how to connect servers to other servers or servers to mainframes, consider the amount of traffic that is likely to go over the line. If speed is not essential and traffic is expected to be low, consider dial-up communications links rather than direct links.

▶**Two- vs. three-tier architecture.** If your operation is small (five to eight users) and is not expected to grow, then a two-tier setup (PC workstations in place of 3270 terminals) may be viable.

Of course, skimping on certain components can result in an underpowered, problem-ridden environment.

Where NOT to skimp

▶**Server.** Never, never, never skimp on server power (i.e., CPU microprocessor, dynamic random-access memory chips and hard disk).

Servers are always located at a critical choke point in the offloaded development environment. Having an underpowered server will slow down all users and make the transition to offloaded development more difficult.

In addition, initial savings will be quickly consumed by expensive server upgrades.

If you need an item to skimp on with the server, try the monitor. Fancy IBM Video Graphics Array graphics are almost never needed on a server. Character-based terminals will usually do nicely.

▶**2½- vs. three-tier architecture.** There is no technical reason to choose a 2½-tier environment (PC workstation connected directly to the mainframe and a LAN) over a three-tier environment. There is no financial reason, either.

Both environments require LANs and servers, but the three-tier consolidates comunications links at a single server, while in the 2½-tier, each PC has its own link. This makes the three-tier environment cheaper.

Look into discounts, VARs, stockpiling

A major cost associated with setting up an offloaded development environment is software for both the server (local-area network software) and the PC workstation. When determining where to minimize costs in the software area, it's best to concentrate on the PC workstation side because server software prices are generally not high when you consider the oumber of users. For instance, an unlimited server license for certain LAN packages can be less than $3,500.

PC workstation software, on the other hand, can be very expensive. For example, Micro Focus, Inc.'a Cobol Workbench lists for $3,000, and Intersolv, Inc.'a APS/PC Workbench lists for more than $9,000 for some configurations.

Minimizing costs for workstation software is a matter of wisely choosing where you get your software, negotiating your terms of purchase according to what'a best for you and deciding whether to get a maintenance contract.

Many different types of vendors sell PC software. Determining where to procure your software is the consideration that will directly affect your costs:

▶**Discount houses.** Discount houses charge very low prices for software packages that sell in fairly large quantities. However, discount houses normally don't carry expensive packages or those requiring a lot of tuning or training.

▶**Value-added resellers (VAR).** VARs will usually carry a limited selection of complex software packages that they specialize in. In addition to having software packages usually available for immediate delivery, VARs can offer training and assistance with installation.

Prices for software from VARs can sometimes be higher than from other sources.

▶**Software houses.** Software houses that produce complex/expensive packages will usually reserve availability for just themselves or certain VARs. If you are looking for many copies of a tool, the software house should be able to provide the best discount possible.

After identifying the appropriate vendors for the software tools you plan to purchase, questions regarding the terms of purchase come into play. Some of the terms that directly affect software costs include the following:

▶**Discounts.** This is a tricky area in that there are oot a lot of set rules. A discount can range anywhere from 0% to 80% of list price. It depends on how hungry the vendor is, how much competition there is and what the published discount schedule is.

It can also be influenced by what commitments the customer is willing to make and the list price of the products. Products with prices in the $2,000-plus per copy range can be discounted significantly because there is room to maneuver. Products in the several hundred dollars range usually can't be discounted as much.

Contacts among friends and colleagues who have purchased tools can help you get an idea of how much of a discount to ask for.

▶**Stockpiling.** One way to get discounts is to buy a large number of copies of a package up front and store them until they are needed. However, this isn't always a savvy practice because new versions of software are always coming out, making previous versions obsolete. A good rule to follow is to buy only what you can make good use of in the short term (two to three months).

▶**Cumulative contracts.** If a vendor is reluctant to give a significant discount without the purchase of a large number of packages, then try to get it to agree to a cumulative contract. That is a contract that gives bigger and bigger discounts for each additional copy of software purchased.

Another consideration that will directly affect software costs is whether to buy maintenance contracts — which include technical support and new releases — for major software packages or to buy the new releases as needed.

Usually users are better off when they buy whatever upgrades they need. You should purchase new releases only if there is some new feature in it that you need. As far as technical support goes, it is rare to find a PC tool vendor that will refuse technical support because the user hasn't purchased a maintenance contract.

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development usually involves long periods of coding, testing and repeated compilations. Moving to PCs will provide big gains in developer productivity, program quality and mainframe use charges.

Projects in the maintenance phase are trickier to figure out. Whether a project in the maintenance part of the development cycle should consider moving to an offloaded development environment depends mostly on how much it resembles a new development project.

Projects that involve only small-scale changes or enhancements or just repair maintenance will usually not be able to cost-justify the conversion to an offloaded environment. The reason? Changing just a few lines of code in a module cannot support the time or trouble of downloading it to a PC workstation, making and testing the change and then uploading it.

Maintenance projects that handle a large quantity of changes and enhancements on a regular basis should see nearly the same benefits of productivity, quality and cost savings that a new development project sees.

The payoff

Productivity benefits for new development and certain maintenance projects offloaded to PCs are attributable to subsecond response time, powerful tools and a high degree of interactivity on the smaller platform.

Subsecond response time can have a large impact on productivity because the user's concentration is not interrupted as often as that of someone hitting the carriage return on a terminal and waiting three, five or 10 seconds for it to respond. Subsecond response doesn't give the user time to start thinking about what he's having for lunch while he's waiting for his entry to be processed.

IBM and other companies have studied this aspect of subsecond response time. In these studies, programmers used dumb terminals that were channel-attached to MVS mainframes. This meant that the users had subsecond response for trivial commands, such as ISPF edit commands, but not for compiles. The developers reported that the time they spent designing, coding and unit testing was reduced 37% to 50%. This had a significant impact on project delivery times as well as on employee morale.

Productivity improvements in offloading development to PCs is also attributable to the use of more powerful tools. For example, in Cobol debugging and unit testing, full-screen display is generally regarded as superior to single-line display, with a 50% productivity improvement possible.

A final productivity consideration is the degree of interactivity. In most mainframe environments, when a command is entered, an entire screen of data is sent between the computer and the terminal. This is not the case with PCs, which leads to a great increase in human/computer interactivity. In addition, peripherals such as mice can also speed up activities.

As with productivity, the quality of applications developed in the subsecond response time environment of single-user PC workstations is significant. This is because of the effects of workstation vs. mainframe testing tools.

Most applications developed for large businesses involve the use of DBMSs and sometimes teleprocessing monitors. Doing significant unit, string and system testing usually involves working against a single-test database. (Single-test databases are used because it is usually not a trivial matter to set up a test database, which usually involves going to a database administrator.)

When testing, the programmers or testers find themselves wanting to test a module or system thoroughly but not at the risk of crashing or damaging the test database or teleprocessing monitor region. This could interfere with someone else's work and/or take a long time to fix or restore from a backup. Thus, testing is difficult, time-consuming and not as complete as it could be.

In a workstation environment, developers can create their own test databases or teleprocessing monitor test regions without assistance from others. They can also test more thoroughly because damaged databases are easily replaced. PC-based testing can also involve the execution of code that is difficult or impossible to test in the mainframe environment. Overall system quality goes up.

Mercenary considerations

In terms of costs and cost savings, an offloaded development environment can range from $2,500 to $20,000 or more per user. Typical costs will be in the range of $12,000 to $18,000.

These costs are offset by two major savings. The first and most important is productivity. Successful offloaded development environments should encounter productivity improvements of at least 30% (i.e., if a project had $100,000 in labor costs before deployment on an offloaded development environment, it should have labor charges of only $70,000 after converting over). In large companies this would mean a per-person productivity increase worth $30,000 per year (i.e., 2,000 billable hours per year x $50 per hour x 30% savings). This, of course, assumes that there is extra work waiting to be performed by the developer.

The other major cost saving is reduced mainframe charges. In many large companies, IBM MVS TSO charges exceed $1,000 per month per developer for those actively doing new development work.

These charges are usually attributable to CPU- or I/O-intensive activities such as compiling and testing. Coding and editing functions are usually inexpensive. In successful offloaded development environments, a large number of compilations and tests are carried out on PC workstations. In new development environments, where programs are repeatedly compiled and then dynamically tested many times, this can account for 80% to 90% of developer TSO charges. Obviously, for environments in which mainframe-based production runs are also performed by the developer (e.g., ad-hoc reporting) the percentage would be less.

Thus, the high-level numbers for an offloaded development environment are as follows:

▸Costs:

$15,000 per developer (including hardware, software, support).

$3,000 per developer per year (ongoing support).

▸Benefits:

$30,000 per developer per year (productivity improvement).

$10,000 per developer per year (reduced mainframe charges).

The benefits of offloading application development to PCs can be very exciting, but be careful to keep your expectations realistic. It is important to realize that even if offloading is right for your company, it will still take at least six months to a year to complete the move. Dedication to achieving a highly productive environment in the long term is necessary. If you cannot sustain such an effort, you should likely avoid conversion altogether. ●

Mainframe practices that pay

Many standard development practices that developers should be following in their mainframe environments really pay off when users are considering a move to an offloaded development environment. These are the most important practices:

▸**Isolation of I/O.** Having calls to DBMSs and teleprocessing monitors isolated from the system logic not only gives development groups extra flexibility in the selection of system software but also simplifies the conversion of programs from mainframe to offloaded development environments.

Keeping calls to DBMSs and teleprocessing monitors relegated to a small number of I/O modules decreases the number of potential trouble spots.

▸**Use of mainstream tools.** Use of obscure languages, DBMSs and teleprocessing monitors not only makes it difficult for management to find and retain knowledgeable staff but also ignores the reality that software vendors usually don't pay attention to these areas. It is a lot easier to find PC-based Cobol tools than PC-based PL/1 tools.

▸**Discouraging the use of interlanguage calls.** Interlanguage calls (e.g., a Cobol program calling a subroutine written in PL/1) are never simple to implement, even in the world of IBM mainframes. This is why they are strongly discouraged in most IS shops.

Offloaded development environments are no exception to this. Trying to get a program written in one language and supported by one vendor's package to call a program written in another language and supported by a different vendor's package is usually extremely difficult if not impossible in the PC workstation environment.

▸**Use of common modules.** In addition to improving developer productivity, extensive use of common modules will greatly assist the transition from mainframe to offloaded development.

This occurs for two reasons. First, it is easier to identify the key modules of the existing mainframe system. This is important when checking for compatibility problems between mainframe- and workstation-based tools. Second, use of common modules means there will be fewer modules to keep track of and move around.

Effect on 'Joe average' shop

The impact of offloaded development on the culture and organizational structure of an IS shop can be very significant. IS managers should be aware of the possible implications and plan accordingly. Some of the major impacts can include the following:

1 *Threat to hierarchical management structure.* With the availability of networked PC workstations, E-mail and groupware, the gathering of teams of developers to accomplish specific tasks is usually easier than in the mainframe-only environment. When technical boundaries are less of a problem to the assembling of development teams, organizational boundaries become more obvious.

2 *Management has more on its plate.* Most managers of mainframe-based IS shops are not used to dealing with large-scale hardware issues or network management. In the old environment, these things were usually handled by the same people who operated and maintained the mainframes. Therefore, management's reaction to the possible introduction of offloaded development may underestimate the effort and complexity involved.

3 *Conflicts between liberal and conservative proponents of new technology.* In an offloaded development environment, the development groups have to decide which new technology to embrace. IS management must play devil's advocate.

If a majority of a development team wants to pursue the introduction of new hardware and software aggressively, management should ask for a closer examination of the viability of the proposed new tools. If the majority is overly conservative, then management needs to provide extra encouragement to pursue new technology.

4 *Restructuring of support and administration functions.* With the deployment of offloaded development technology, more administrative and support functions will need to be moved to the application development groups themselves.

5 *Changes in chargeback for internal support.* In many large companies, there is an IS department that operates and maintains mainframes and networks and provides a central organization for technical support and standards. In most cases, the funding for all this is included in the mainframe use rates.

However, with more computing being done on PC workstations, servers and LANs, the traditional funding method starts to dry up. IS management needs to address this question.

PC users agree: Support takes center stage

Downsizing trend in IS departments may be preventing companies from maximizing their systems' potential

BY MICHAEL FITZGERALD
CW STAFF

From supers to micros, computers have one essential thing in common: They get used.

Users, particularly personal computer users in a distributed computing environment, also have one thing in common: They need help, whether in learning how to use their systems, venturing deeper into an application's complexity or dealing with emergencies.

Yet these kinds of issues may not make the list of priorities at newly lean-and-mean information systems organizations. According to a recent market research study, 39% of all companies with PC users have no structured policy for handling support — and this includes 23% of firms with more than 10,000 employees (see story below left).

That is a deficit few firms can afford.

"You need a wide range of skills to do technical support effectively — you need a NetWare engineer, someone who knows hardware technology, someone who knows 1-2-3, etc., and you can't afford it on a local [office] basis," says Sheldon Laube, national director of information and technology at New York-based Price Waterhouse.

Beating the bushes

At a time when industry figures from entrepreneur Michael Dell to consultant Michael Hammer say computers are not being used as well as they could be, users such as Laube say their companies can't become more efficient and sophisticated computer users until and unless they get better support. IS organizations, meanwhile, are beating the bushes for ways to provide it: vendors, third-party companies — including resellers — help desks, internal consultants and various combinations thereof are getting called on to handle support.

"Auburn is a small town, so there aren't a number of service providers here," says Bliss Bailey, a network services specialist at the Division of University Computing Services (DUCS) at Auburn University in Auburn, Ala.

The university has compensated for this through its own size and also by selective decentralization: Several departments, such as the School of Engineering, have their own autonomous IS departments.

The university's DUCS is also taking some unconventional routes to improve support: building its own PCs to ensure the quality of its hardware, for example, and grading support levels.

We "don't support students so much, but we do have administrative staff, professors and [other] faculty members, and they have really different sets of needs," Bailey says.

Basically, DUCS effectively "ends up doing a lot of compromising," according to Bailey.

To make support "as generic as possible," Auburn University has made it clear wherever possible that it will support only certain applications. Bailey says this approach works fairly well for the administrative staff, but faculty members frequently go beyond what DUCS can support.

"They may need to use applications so specialized that we are at risk of not understanding what they're working with — like astrophysics," Bailey says. "They want to use packages we have no experience with. It's very difficult to support them in that context."

Like many state institutions, the university faces budget crunches. It may stop making its own PCs to try to take advantage of cost savings offered through state buying contracts, Bailey says, and it has generally sacrificed on hardware spending in favor of maintaining staff and training levels. It also limits support to the hours of 8 a.m. to 5 p.m.

Outsourcing support

Philadelphia-based Comcast Corp. has found support relief through outsourcing. The company, which has its main data center in Miami, has seen significant savings in support costs since it outsourced part of its support group, according to Douglas Murphy, Comcast's IS director.

"We had three full-time people at our Philadelphia headquarters responsible for doing maintenance and problem triage, along with providing some sort of purchasing guidelines," Murphy says.

"It became very complex to support locations outside of corporate."

Comcast, a cable and networking firm, has approximately 70 cable offices nationwide. Each houses disparate hardware and software. It wanted to boost its technological expertise, coordinate purchasing to cut down on no-name clones and build a national support organization. As the company looked at ways to effectively support itself within these limits, "we realized that . . . we would have to build a staff significantly larger than we have now just to handle

Continued on page 89

Mission impossible

All too many large commercial companies do not believe they can effectively support their PCs, according to a recent study by BIS Strategic Decisions in Norwell, Mass., and Weingarten Publications, Inc.

The two market research firms polled approximately 500 commercial firms across a wide spectrum of sizes. Some 51% of the respondents reported that they cannot meet all their end users' support needs.

The survey also showed that 52% of all user organizations have switched vendors over support issues.

On average, respondents estimated it costs $415 annually to support a PC and another $319 to support each end user. For small companies — those with fewer than 99 employees — these costs rise to $1,062 for each PC and $889 for each user, while companies with more than 10,000 employees spend $295 for each PC and $252 for each user.

The report yielded some unexpected quirks. For instance, IBM was rated as providing the worst PC hardware support, but it also dominated the ratings for best support provider. Similarly, Compaq Computer Corp. finished second in both categories.

Microsoft Corp. and Lotus Development Corp. also hit both extremes. They copped the top two spots, respectively, as worst providers of software support — and also placed second and third as best.

MICHAEL FITZGERALD

Outsourcing auditions

When Comcast decided to look into outsourcing its support operation, it called in IBM, Computers for the Professional Ltd. — one of its resellers with experience in building help desks — and Forte Systems, Inc., a small Westchester, Pa.-based vendor that had helped Comcast in a disaster-recovery situation, says Douglas Murphy, IS director.

Although it had originally considered Forte only from a disaster-driven sense of allegiance, Comcast decided to go with the small company, which came in with a bid that was both worthy and priceworthy.

Under the agreement the two companies forged, a Forte support staffer works on site at Comcast's Philadelphia headquarters. This person coordinates parts inventory and handles support for all offices within a 100-mile radius. Forte also runs a help desk for Comcast's users; Comcast keeps a two-person help desk in Miami to handle anything beyond the Philadelphia area.

The program is only in its second quarter. However, Murphy says, it has effectively handled its first challenge, the Michelangelo virus — two cases were diagnosed and stopped before any data was lost — and is ahead of its budget projection. Comcast expects to save $140,000 from its $370,000 annual support outlay. As Murphy sees it, "We've multiplied our service level by 600% and reduced expenses by 33%."

MICHAEL FITZGERALD

Self-service a growing trend for customers

Self-help terminals benefit consumers, firms

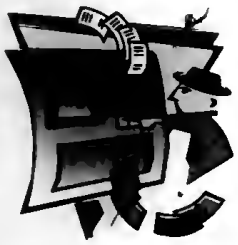
BY MITCH BETTS
CW STAFF

Taking some labor-saving advice from Tom Sawyer, U.S. and European banks, hotels and retailers are experimenting with self-service computer terminals in hopes of getting customers to handle routine transactions themselves.

"For consumers, it's part of the do-it-yourself craze. For the companies, it's like Tom Sawyer getting someone else to paint his fence," said Jerry Kanter, director of the Center for Information Management Studies at Babson College in Wellesley, Mass. Customers are willing to use the self-service terminals if they perceive some benefit, such as faster service, he said.

The classic example of a self-service terminal is the automated teller machine (ATM). When the first ATMs were introduced in 1971, critics said consumers would find them too impersonal, noted Terrell Ward Bynum, director of the Research Center on Computing and Society at Southern Connecticut State University in New Haven.

Instead, people found ATMs so convenient they switched accounts to latch onto a bank with an ATM network [CW, Jan. 20]. For example, researchers said Citibank's ATM network helped it increase market share in New York City from 4% in 1977 to 13% in 1988.



Now, banks are experimenting with self-service terminals that can cash checks, reorder checks, print statements and even sell insurance policies, according to Mentis Corp., a market research firm in Salisbury, Md. The terminals can extend the bank's hours and locations without an increase in staff and branch overhead costs.

Rather than rushing into big investments in self-service technology, however, most banks are still experimenting with small pilot programs, said Mentis associate Mary Donadoni. In order to cost-justify larger investments, banks want to know whether the terminals can produce a significant revenue stream, such as by cross-selling other banking and insurance products, she said.

Similarly, several hotel chains are now pilot testing automated check-in terminals to cut down on lines at the front desk, said Dan Daniele, a hospitality industry consultant at Ernst & Young in Chicago. The systems are great for frequent business travelers interested in speed and efficiency, but Daniele said the machines will never gain widespread use or totally displace the front desk staff.

Some big hotel chains reportedly have vowed never to use the technology on grounds that it eliminates the "warm, personal greeting."

EXECUTIVE TRACK

Richard H. Gilman, former deputy director of systems and technology at **The New York Times**, has been promoted to the position of vice president. He succeeds Elise J. Ross, who was recently named corporate vice president in charge of information systems and technology at the newspaper publishing firm. Gilman, 41, will be responsible for operating, maintaining and developing all of the newspaper's business and news computer systems as well as for developing the paper's information technology strategy.

Gilman came to the newspaper in 1983.

• • • • • • • • • •

Palo Alto, Calif.-based **Collagen Corp.** recently appointed its IS group manager, **David Foster**, vice president of finance and chief financial officer. An eight-year veteran of the biomedical devices manufacturer, Foster, 34, will report to Collagen President and Chief Executive Officer Howard Palefsky.

• • • • • • • • • •

Maurice Collin has been named general director of **General Motors Corp.**'s recently created Market Data Center. Collin, 57, has been with GM for 32 years. At his new post, he will now direct the collection, preparation and reporting of worldwide corporate marketing data as well as creation and maintenance of worldwide automotive market information systems.

• • • • • • • • • •

Former Fleet Bank NA data processing and consumer lending executive **Bryan Bowerman** recently became executive vice president and lending and operations division head at **Society for Savings Bancorp, Inc.** Bowerman, a 25-year banking industry veteran, will manage IS, bank operations and lending services for the Hartford, Conn.-based bank.

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Support takes center stage

CONTINUED FROM PAGE 87

support across the country," Murphy says.

Instead, Comcast opted to rely on the nationwide support force someone else has already built: in this particular case, Westchester, Pa.-based Forte Systems, Inc. (see story page 87).

At Price Waterhouse, Laube has made better support a cornerstone of his company's new technology strategy [CW, Jan. 13].

Supplying support

Price Waterhouse has roughly 110 offices to support and this year began putting in place a regional support structure of 20 offices, with staffs ranging in size from five to 25.

"We see two components to support," Laube says. "One is keeping things running. The other is helping people use the technology more effectively. If [both] are handled by the same people, there are always too many fires to put out to help people figure out new ways to use the computers, and that's where the real energy should be spent."

According to Laube, Price Waterhouse does not expect to save money with its support structure, despite the consolidation.

"It'll probably cost us more, but we think it'll give us much better utilization of our technology investment," he says. "We have $100 million invested in this technology, and we want the most effective return we can get."

DPMA presents awards to Hennessey, Manning

BY ELLIS BOOKER
CW STAFF

PARK RIDGE, Ill. — The Data Processing Management Association (DPMA) has announced that Audrey Kathleen Hennessey is the winner of its Distinguished Information Sciences Award.

Hennessey is an associate professor of management information systems and also the director of the Institute for Studies in Organizational Automation at Texas Tech University in Lubbock.

Past award winners include Ross Perot, Mitchell Kapor and the late Rear Admiral Grace Murray Hopper.

The DPMA also announced the selection of David L. Manning as the recipient of its Information Processing Public Service Award.

Manning is in his second term as commissioner of the Department of Finance and Administration for the state of Tennessee. In addition, he is head of the state's Information System Council.

Manning and Hennessey will accept their awards at the 1992 Info/Tech Management Conference and Exposition, slated to be held in Nashville in October.

CALENDAR

AUG. 2-8

International Gupta Developers Conference. San Francisco, Aug. 2-5 — Contact: Gupta Travel Headquarters, San Francisco, Calif. (415) 445-8813.

GroupWare '92 Conference & Exposition. San Jose, Calif., Aug. 3-5 — Contact: The Conference Group, Scottsdale, Calif. (602) 661-1260.

Fed Micro '92. Washington, D.C., Aug. 5-6 — Contact: Sylvia Griffiths, National Trade Productions, Inc., Alexandria, Va. (703) 683-8500.

Foss CD-ROM and Multimedia Conference & Exposition. Washington, D.C., Aug. 5-6 — Contact: Sylvia Griffiths, National Trade Productions, Inc., Alexandria, Va. (703) 683-8500.

Professional Engineers Examination Conference. Indianapolis, Aug. 5-6 — Contact: Institute of Industrial Engineers, Norcross, Ga. (404) 449-0460.

AUG. 9-15

The 24th National Association of State Information Resource Executives Annual Conference. St. Paul, Minn., Aug. 10-12 — Contact: Mary Alice Sonby, National Association of State Information Resource Executives, Lexington, Ky. (606) 231-1905.

Apple Enterprise Computing Conference. Boston, Aug. 12-14 — Contact: Emilio Robles, Apple Computer, Inc., Cupertino, Calif. (408) 862-5671.

AUG. 16-22

Sigcomm '92. Baltimore, Aug. 17-20 — Contact: SRI International, Menlo Park, Calif. (415) 326-6200.

Windows & OS/2 Conference. Boston, Aug. 19-21 — Contact: CM Ventures, Inc., Emeryville, Calif. (510) 601-5000.

AUG. 23-29

Interex Users Conference. New Orleans, Aug. 23-27 — Contact: Michelle Pettigrew, Interex, Sunnyvale, Calif. (408) 738-4848.

SynOptics User Group Conference. Washington, D.C., Aug. 24-26 — Contact: Dennis Farr, SynOptics User Group, Santa Clara, Calif. (408) 988-2400.

Marketing the IS Organization Internally. Columbus, Ohio, Aug. 25 — Contact: The Ouellette & Associates Registrar, Bedford, N.H. (603) 623-7373.

Auto-Tech. Detroit, Aug. 25-27 — Contact: Automotive Industry Action Group, Southfield, Mich. (313) 358-3570.

Downsizing Expo. San Francisco, Aug. 25-27 — Contact: Digital Consulting, Inc., Andover, Mass. (508) 470-3880.

Cohesion Conference. Boston, Aug. 26-28 — Contact: Stephanie Vickers, BIS Strategic Decisions, Norwell, Mass. (617) 878-6650.

Computerfest '92. Dayton, Ohio, Aug. 29-30 — Contact: Mark Hanslip, DMA Computerfest, Dayton, Ohio (513) 263-3378.

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For almost 10 years, Devon Consulting has been staffing large data-processing shops in the Philadelphia area with temporary high-tech programming professionals. As President Joel Adams explains, the firm essentially provides programmers, technical writers, and DP specialists like systems programmers, software engineers, and database administrators to companies on a contractual basis as needed. Looking at the specialized computer skills required by their ever-expanding client base, he knows their recruitment message must reach the most qualified audience available. So, like fellow NACCB members who report favorable results, he, too, advertises in *Computerworld*.

"Our clients - banks, insurance firms, pharmaceutical and chemical companies, and software developers - typically require seasoned professionals with unique, hard-to-find skill sets. However, professionals with a minimum of three years' experience in specific technical areas are often few and far between. To fully satisfy our clients' objectives, I need to target an audience with very technical expertise. With its highly qualified readership, *Computerworld* is crucial in helping us make that match.

"As we began to expand outside the immediate area into New Jersey and Delaware, our need to reach a wider technical base grew as well. Unlike our advertisements in Sunday editions of local metropolitan newspapers, our recruitment advertising in *Computerworld* draws qualified candidates not only from New Jersey and New York but also from all around the world. It's by far our single most-effective vehicle for reaching our target audience. Clearly, our recruitment advertisements in *Computerworld* cost less than in other newspapers and produce higher quality responses. In the past two weeks, for example, nearly 20% of the resumes we received came from *Computerworld* alone.

"In our business, recruitment results like these are key. In 1990 we placed about 135 new starts in addition to the employees we already had in place. This year we expect that number to total 165 or possibly higher. To ensure that Devon Consulting continues placing the right professionals in the right jobs, we fully intend to run an ongoing recruitment advertising schedule in *Computerworld*. When it comes to advertising, we believe that consistency is just as important as the size, message, and vehicle.

"Overall, our *Computerworld* recruitment advertising fulfills a threefold purpose. First and foremost, it's invaluable in recruiting all the top technical talent we need. It also helps us gain share of mind among a highly qualified base of readers. Finally, we know our clients read *Computerworld* and view its advertisers as significant players in the industry. When they read our advertisement, then, they see Devon Consulting as an advertiser in the industry's trade journal. That kind of presence only enhances our company image."

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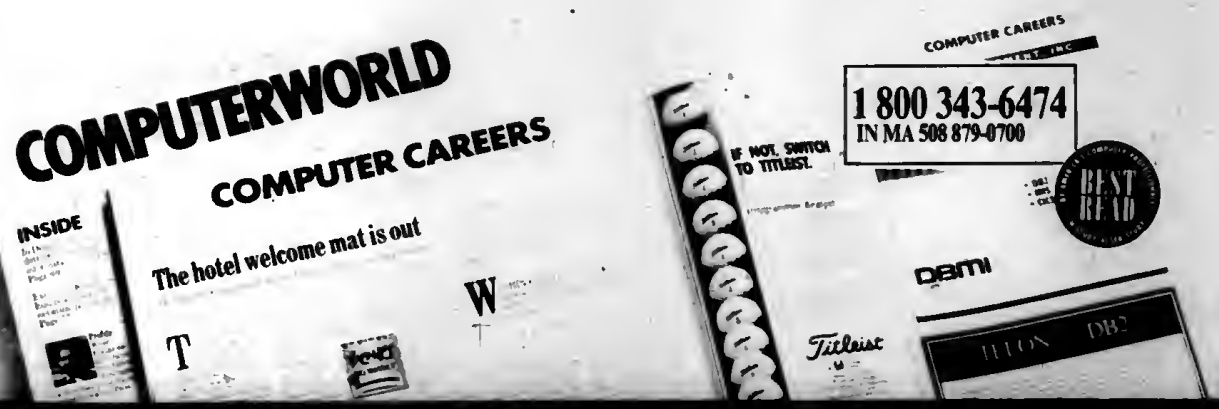

Smart answers to tough questions

You're sitting across from an interviewer who is the key to getting the job you want in a desirable company. You think you're doing fine, but then he asks you a question that you don't quite know how to answer. You stumble for what you hope is an intelligent response, but the incident throws you off stride. You see your chances for getting the job falter as you go through the rest of the interview in a fog.

Don't let this happen to you. To help you parry the tough interview question, we asked recruiters to give us some common queries and those responses that will keep you in the running or knock you out of the race.

Question: Tell me about yourself.

Incorrect: Well, I was born and raised in Moose River, Maine, and became interested in computers at a very young age. I started a computer club in junior high, and when I was in high school, I was president . . .

Correct: As you can see from my resume, I graduated from college with honors. I secured my first job with XYZ Corp., where I . . . After leaving XYZ, I started my own company.

Rule of thumb: Rehearse a short presentation that describes your accomplishments in chronological order, focusing only on things that will be of interest to the interviewer. Know when to stop — think in 30-second sound bites. A long-winded response will make you appear unorganized.

Question: What was the biggest data processing disaster you caused, and what did you do to resolve it?

Incorrect: I was responsible for implementing changes to an existing production system. Somewhere along the line, someone forgot to do some of the required steps — it wasn't me — and the system blew up. It wasn't my fault, though, so I let someone else solve the problem.

Correct: I was responsible for implementing changes to an existing production system. The problem was, I hurried through the procedure, cutting out a few steps, and went ahead and implemented the changes anyway.

It blew up and caused all kinds of problems in the user community. To fix the problem, I ended up going back and correcting it so the users wouldn't be upset.

Rule of thumb: You want to show that you can handle responsibility when things go wrong and that you learned from your mistakes.

Question: Describe your most significant information systems accomplishment?

Incorrect: I managed 95 people developing our new payroll system.

Correct: I was responsible for the development and implementation of our new payroll system, which was delivered three months ahead of schedule with full functionality. This saved the company more than $350,000 during the first six months of operation.

Rule of thumb: You want to answer with specific accomplishments. The correct response offers information on how your actions and responsibilities positively affected the bottom line.

Question: What are your long-term career goals?

Incorrect: I want to work in a stable company where I can gain new skills and make a contribution.

Correct: My goal is to become a senior IS manager responsible for ongoing application areas. I intend to get there by seeking out intermediate positions that strengthen my knowledge of the business, technical skills, project leadership and supervisory skills.

Rule of thumb: Not only have you identified a long-term goal that is available in the interviewer's company, but you've also identified the intermediate goals that are required to attain the long-term goal.

Question: What salary are you looking for?

Incorrect: I'd like to earn $50,000 a year.

Correct: The reason I'm here interviewing with you is that I'm looking for the best career opportunity. Based on my knowledge of the company and the opportunity so far, I'm very interested in pursuing both. To answer your specific question about what I am looking for in the way of salary, that's your call to make.

Once I get to know the firm and the firm gets to know me, and you feel I can handle this job, my hopes are that you'll make me the best offer you can.

Rule of thumb: By quoting a specific figure, you could be shortchanging yourself. If the job only went up to $45,000, you've knocked yourself out of the ballpark.

By making salary the interviewer's call, you'll put the situation in the interviewer's hands, where it belongs. Without actually saying it, you've said, "I didn't come in here with a price tag on my head. I'm a long-term company person interested in growth and technical challenge."

You've also said, "I trust your judgment to make me a fair and equitable offer." It'll be a win-win situation because you won't be making an unreasonable demand, and you won't be putting yourself out of the salary range before you can take a crack at the job.

Question: Have you used XYZ tool?

Incorrect: No, I haven't used that tool.

Correct: No, I haven't used that specific tool, but I understand it's quite similar to tool ABC, which I've been using for three years. As a matter of fact, I taught myself to use tool ABC at my current job.

Rule of thumb: Your response is truthful and also brings a positive attitude to your answer. You are displaying a can-do, self-starting attitude. You've also indicated your ability to overcome past training gaps.

These interviewing tips were provided by Jim Parker, a senior recruiter at Technical Connections, Inc. in Los Angeles; Chuck Muller, a partner at Andersen, Jones & Muller in Southfield, Mich.; Chick Bisberg, president of Two-Party Systems, Inc. in Livingston, N.J.; and Max Steiner, marketing director at Corico Recruiters and Contract Solutions, Inc. in Salem, N.H. Compiled by Kelly E. Dwyer, assistant editor, features.

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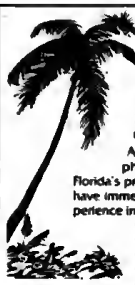

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Arrghh! My blasted computer's down

BY KATHLEEN GOW
SPECIAL TO CW

Remember the time your car conked out on the way to that important meeting with your software vendor? One phone call and your road service technician had you on your way in no time.

Help desk operators have a little of the road service troubleshooter in them. They get called in to assist business users in dire need of help, whether it's a file sent to a wrong printer, a garbled document or s whole local-area network going down in the middle of the day.

Help desk operators' lives can get exciting, especially when the 20 users of that crashed LAN are ringing the phone off the hook.

"A help desk analyst has to be able to calm the person down on the other end of the line," says Dean Wortham, store systems hotline manager at Dallas-based JC Penney Co. He oversees the retailer's three help desk groups. "They can't be easily perturbed."

Keeping it cool

At JC Penney's help desk, not being perturbed means being able to handle anxious, frustrated or even verbally abusive store managers who are having cash register hardware problems 10 minutes before opening.

A customer service orientation is important to have, managers say, although it needs to be backed by technical proficiency and the ability to learn quickly. Formal education is not always a prerequisite to a job on a help desk.

Darren Lindstrom, a help desk operator at Brookstone Co. in Peterborough, N.H., does not have a college degree, but he personifies "someone who is proficient and can find his own way," according to Karen Hamm, network administrator. That ability, as well as the ability to think on his feet, has helped Lindstrom handle queries in the wake of the company's recent downsizing from mainframes to IBM Application System/400s.

Lindstrom's duties vary widely: Problems can be as simple as someone's phone not working or as complex as somebody's database program no longer accessing his files.

On a quiet day, when the calls aren't constant, Lindstrom's responsibilities include keeping personal computer inventory up to date and installing new software.

Because "there's no such thing as a typical help desk," the technical skills needed to work on s desk vary from situation to situation, says Mark Nemtzow, director of research at the Help Desk Institute (HDI) in Colorado Springs.

Two may be better

For example, at Reader's Digest Association, Inc. in Pleasantville, N.Y., there are two help desks — one for PC users and one for mainframe users — called "field engineering services."

The PC help desk gets 1,500 calls a month from about 2,000 users. Of those 2,000 users, 1,200 also get support from the mainframe help desk.

"They really are two different disciplines," says Paul Foley, manager of the PC help desk. "The PC people need to have a base knowledge of DOS and standard software packages."

Reader's Digest's mainframe help desk staff have come from operations backgrounds, bringing with them s familiarity with VMS, IBM's mainframe operating system, and VTAM, communications software for Systems Network Architecture environments, according to Robert Croft, supervisor of the mainframe help desk and one of three help desk personnel who handle about 100 calls s day.

What both help desks share is the need for employees who can deal with people in a pleasant way under stressful conditions.

Help desk staff members cite variety and continuous learning as pluses. "You can learn s lot of different applications and keep pretty much up to date with new releases," says Joseph E. Stingley, technical analyst at the Host/User Support Group, one of the three help desk staff members who make up JC Penney's store systems hotline. Such broad knowledge can't look bad on a resume, Stingley adds.

Stable income

As for job security, Wortham says, "the help desk business is booming because so many systems are being rolled out and every software and hardware system needs support."

Nemtzow agrees: "The more you have end users doing their own computing, the more of a need there will be for a help desk." He adds that HDI's research shows that help desk professionals move into one of six areas: programming, network management, operations, end-user computing, a noninformation systems department or another company.

A growth path on the help desk itself depends on its size. On the PC help desk st Reader's Digest, for instance, there are five title and salary levels, ranging from the entry-level associate field engineering coordinator (at an annual salary of $25,000 to $27,000) to senior field engineering analysts with some supervisory responsibilities (from the high $30s to the mid $50s).

Stress is the job's primary drawback. "Every once in a while you get a pat on the back, but they are few and far between," says Terry Gillespie, operations manager in charge of the help desk at Dr Pepper/Seven-Up Cos. in Dallas.

Gow is a free-lance writer based in Medford, Mass.

Double-edged sword

One of the biggest changes coming down the road for help desk analysts is the growing use of automation software. By far the biggest change in the role of help desk analysts at JC Penney has been the addition of the Apriori knowledge-based system from Answer Computer, Inc., says Dean Wortham, JC Penny's store systems hotline manager. "It used to be all manuals and memory," he adds. "Now it's 'pick-and-click' — we're able to see the solutions and click on one of them."

Before, JC Penney looked for support representatives with specialized knowledge. Today, because the software has allowed the firm to consolidate eight help desk teams down to three and replace seven telephone operators with an automated call processing system, the qualities the company emphasizes are commitment to customer service and good communications skills.

The automated system has meant less stress for help desk personnel because the system serves as a knowledge base and historical record. In the past, each of the eight help-desk teams would specialize in one specific area of support. Now support representatives on the three remaining teams must have technical knowledge in many areas instead of just one.

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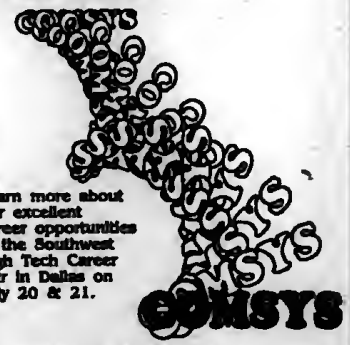

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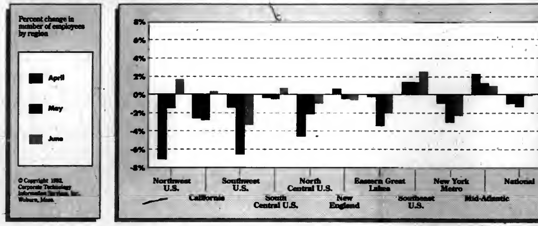
Computerworld/Corptech Career Index

The majority of the nation's employment growth figures during the past three months fell below the 0% line. May was the worst month, with a 1.3% overall decline in employment. June was the best month, with a 0.1% decline.



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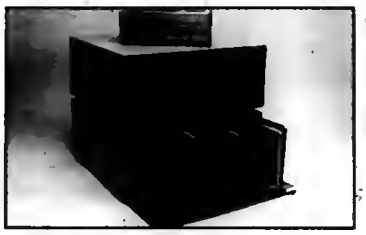

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Don't rush into an escrow

Despite common beliefs, source-code escrows are not always required

BY JOEL B. GILMAN
SPECIAL TO CW

Vendors don't like to talk about it. You probably don't want to pay for it. But what if your vendor goes out of business or files for Chapter 11?

Won't you be sorry that you didn't purchase a source-code escrow, which guarantees you a copy of the original source code? Without it, how will you be able to maintain, upgrade and otherwise alter your software?

You may be nodding your head, "Yes," and getting ready to open your wallet. But before you do, you should realize that you may not have to.

Most corporate policies and legal textbooks on computer law insist that a company obtain a source-code escrow on every software purchase.

If they did, companies would be spending thousands of dollars each year on escrow fees alone. Vendors wouldn't be very happy either because the extra paperwork would make it a hassle to close a deal.

The fact is, despite warnings to the contrary, most people don't need a software escrow. So, before you go through the trouble and expense of setting one up, see if you can answer yes to all of the following statements:

The software is customized exclusively for your company or is so specialized that only a handful of executable copies will be sold.

There is very little to be gained by having access to the source code for mass-marketed software. Yet, a surprising number of buyers' attorneys will try to negotiate an escrow — as a matter of company policy — for mass-marketed software.

The vendor has been in business for less than 10 years, and you have never heard of it before.

No company is invulnerable, but you need to weigh the cost of obtaining an escrow against the probability that the vendor will be around in the future.

A related consideration is how long you expect to use the system.

Typically, business systems are replaced every 5 to 10 years. If you feel confident that the vendor will be around that long, a source-code escrow does very little except cost money.

The vendor does not make the source code available to you as part of the transaction.

If the vendor is willing to license the source code to you, why bother with an escrow? Many companies are willing to release source code — for a hefty fee — but having the source code is better than having it in escrow.

Your company is heavily dependent on the software.

Even if the first three factors are met, you still don't need access to source code if the system in question is only used for minor functions.

.....

If you do decide to purchase an escrow, be prepared for how much it will cost. Escrow holders assume full liability for the proper storage and release of the source code. Therefore, it doesn't come cheap.

You can expect to spend $500 to $2,000 in setup costs (including administration fees) and another $1,000 to $1,500 per year in maintenance and storage.

Some escrow companies may also include one free product update a year. After that, it will cost you.

Gilman is a Seattle-based attorney who practices computer law.

If you decide to buy . . .

Thousands of organizations claim to offer software escrows. Finding one that works for your company is a daunting challenge. A true escrow requires a third party (bank, attorney or other) to administer and take responsibility for maintaining and upgrading the escrow.

The following pointers may help you sort through the options:

- There are many "vault" companies that say they provide escrows when in fact all they offer is a safe-deposit box for everything from floppy disks to Grandpa's cuff links. Go with a company that understands what you're doing and what source code is.
- Don't bother with a bank escrow department — they think in terms of real-estate transactions and won't know what you're talking about.
- Your legal staff should review the escrow holder's contract. Most escrow companies have a separate contract that needs to be approved by both the system vendor and system user and that spells out the details of how and when the source code can be used.
- Make sure the contract spells out when you want the source code released. At a minimum, it should include the vendor's voluntary or involuntary bankruptcy and cessation of business or customer support for the system.
- The agreement with the vendor should state that if the vendor goes under, the bankruptcy trustee is authorized to release source code to the user.

By law, the trustee in bankruptcy has power over a company's assets, including intangibles such as copyrights and computer source code. Without clear authorization, a court may stop an escrow holder from releasing source code — at least until the final discharge order, which can take years.

- Be sure there is a provision in the vendor's and the escrow holder's agreement that ensures updates to the source code are deposited with the escrow holder as soon as they are implemented.

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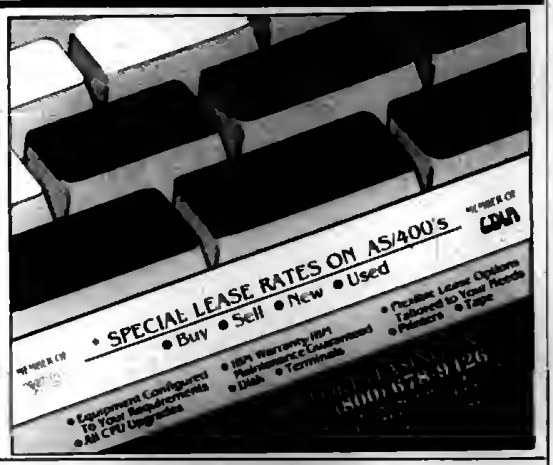

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CASE NOS. 91-B-10646 (CB) THROUGH 91-B-10647 (CB)

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DAY ONE
Tuesday, August 4th
SHOPS
- AIRCRAFT/ENGINE COMPONENT OVERHAUL SHOPS
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DAY TWO
Wednesday, August 5th
ALL MOBILE, AIR START, AIR CONDITIONING, NON-DESTRUCTIVE TESTING EQUIPMENT & GROUND EQUIPMENT VEHICLES
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DAY THREE Thursday, August 6th

COMPUTER, TELEPHONE & RESERVATION EQUIPMENT VAX 11/780 PROCESSOR W/205 MEGABYTE REMOVABLE DISK DRIVE, 456 MEGABYTE FIXED DISK DRIVE, 9 TRACK MAGNETIC TAPE DRIVE, (3) PRINTERS & (2) TERMINALS, IBM SERIES 1 MODEL 4957 MINI-COMPUTER SYSTEM W/IBM 4955/600 CPU W/512 KB MEMORY, AMS MODEL 2600 MICRO COMPUTER SYSTEM W/32 SERIAL PORTS, PARALLEL PORT, 1.2 MB FLOPPY DRIVE, 150 MB 1/4" TAPE DRIVE, 1600/3200 1/2" TAPE DRIVE, 8 MB MEMORY, 590 MB DISK DRIVE, 780 MB DISK DRIVE, (14) ESPRIT 14" TERMINALS, (2) DOT MATRIX PRINTERS, 600 LPM SYSTEM PRINTER, CRT EMULATION W/FILE TRANSFER FOR PC, CRT EMULATION FOR LAPTOP PC, CRT W/A-B SWITCH, COMPUTSHEET (NEW IN 1991) INTERGRAPH COMPUTER AUTOMATED DESIGN SYSTEM W/WORKSTATION, MONITOR, LASER PRINTER, 5 1/4" CD ROM DRIVE, IBM PS/2 MODEL 80 BASED VOICE RESPONSE SYSTEM W/70 MB ESDI HARD DRIVE, 1.44 MB FLOPPY DRIVE, PRO-PRINTER, DICTAPHONE NUCLEUS CENTRAL DICTATING SYSTEM W/(5) RECORDERS & (6) TRANSCRIBING TERMINALS (2) ROCKWELL COLLINS GALAXY ACD SYSTEMS M/N D2ACD, ISOTEC AUTOMATED CALL DISTRIBUTION SYSTEM, MODEL 228, (17) IBM 3178 SNA/SDLC DISPLAY STATIONS SUPPORTED BY IBM 3274 CONTROLLER, (2500) ICOT 781 RESERVATION MONITORS SUPPORTED BY (305) ICOT 790 & 793 CONTROLLER; LARGE QTY OF RESERVATION WORKSTATIONS AND CHAIRS.

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The BoCoEx index on used computers

Closing prices report for the week ending July 10, 1992

	Closing price	Ask	Bid
IBM AT 339	$400	$700	No bid
PS/2 Model 30 286	$500	$900	$300
PS/2 Model 35SX	$1,325	$1,500	$800
PS/2 Model 55SX	$1,000	$1,300	$800
PS/2 Model 60	$600	$900	$325
PS/2 Model P70	$2,100	$3,000	$1,500
PS/2 Model 80	$1,500	$1,600	$1,100
PS/2 Model 95	$4,400	$5,000	$4,000
Compaq Portable II	$425	$500	$375
Portable III	$500	$600	$250
Portable 386	$1,300	$1,600	$1,000
SLT-286	$700	$900	$400
LTE-286	$850	$1,000	$500
Deskpro 286E	$500	$1,000	$325
Deskpro 386/33	$2,000	$2,450	$2,200
Apple Macintosh Classic	$800	$900	$700
SE	$725	$775	$500
IIX	$2,600	$3,000	$2,000
IICI	$3,100	$3,600	$2,460
IIFX	$4,100	$4,900	$3,700

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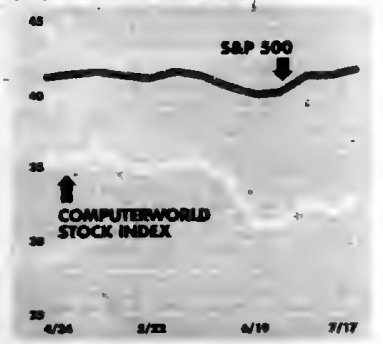

Industry Almanac

RECOMMENDATION CHANGE

UPGRADED FROM UNDERPERFORM TO HOLD: **Digital Equipment Corp.** (Smith Barney, Harris Upham & Co.). DEC (DEC) stock has managed to survive a tough period of sinking revenue growth. The firm's installed base and technical know-how could help bring about a financial turnaround, but Alpha technology is the real ticket to recovery.

The company will probably report an operating loss for its fiscal fourth quarter, but the deficit could be less imposing than expected. DEC shares have been upgraded at this point because the expected loss, combined with a pending restructuring charge and adjustments resulting from a change in accounting practices, could cut into DEC's valuation, lowering it to about $44 per share. The current rating is about $58.

DOWNGRADED FROM STRONG BUY TO BUY: **Micrografx, Inc.** (Alex. Brown & Sons, Inc.). Micrografx (MGXI) recently said its revenue will parallel Wall Street expectations for the company's first fiscal quarter of 1993. However, profits will fall short of predictions, partly because of greater than expected spending on marketing and research and development. Also, an IBM contract that would have brought in additional revenue never surfaced.

INITIAL PUBLIC OFFERINGS

Electronic Information Systems, Inc. filed papers with the Securities and Exchange Commission to offer 1.7 million shares of common stock priced at $5 per share. The Stamford, Conn.-based company offers call-processing systems targeted at users engaged in tasks such as direct marketing, bill collecting and fund raising. Profits topped $1.3 million last year on sales of $20.5 million.

Vitesse Semiconductor Corp., based in Camarillo, Calif., plans to sell 3.2 million shares, priced at $9 per share. Vitesse designs and markets digital gallium arsenide integrated circuits, which are chips used in high-performance computers and communications products. **Convex Computer Corp.** is a large Vitesse customer, accounting for more than 20% of Vitesse's $23.7 million in revenue for 1991. The company posted a $3.2 million loss for last year.

LISA DAVIDSON and KIM S. NASH

Computerworld Friday Stock Ticker

CLOSING PRICES FRIDAY JULY 17, 1992

TOP PERCENT GAINERS

Software Toolworks Inc	50.00
Platinum Technology	27.78
Gateway Communications	25.07
Ask Computer Systems	19.28
Rainbow Technologies Inc	17.24
Network Equipment Tech *	16.67
Digital Equipment Corp *	15.67
Proteon Inc (L)	13.64

TOP PERCENT LOSERS

Sierra Semiconductor	-25.61
Picturetel Corp (L)	-22.28
Wavtek (L)	-19.25
Compression Labs Inc (L)	-17.43
Comshare Inc	-15.00
Corporate Software	-15.00
Printronix Inc	13.04
Chips and Technologies (L)	-12.50

TOP DOLLAR GAINERS

Digital Equipment Corp *	5.88
Motorola Inc *	5.00
BMC Software Inc	4.00
Symantec Corp	3.75
Platinum Technology	3.75
Wellfleet Communications	2.88
Reynolds and Reynolds	2.75
Cabletron Systems	2.75

TOP DOLLAR LOSERS

Picturetel Corp (L)	-5.13
Sierra Semiconductor	-4.00
Banctec Inc	2.88
IBM*	2.88
Computer Sciences*	-2.63
Compression Labs Inc (L)	-2.38
Group I Software	2.00
Borland Int'l Inc * (L)	-1.88

Exch	52-Week			July 17 Close	Wk Net Change	Wk Pct Change
Communications and Network Services						Up 2.19%
OTC	15.00	6.75	3 COM Corp *	10.00	0.00	0.00
NYS	67.38	36.25	American Info Techs Corp (H)	67.38	0.88	1.32
NYS	44.63	32.88	AT&T*	44.50	0.75	1.71
OTC	4.25	1.00	Ariel Communication Corp	1.38	-0.13	-8.33
NYS	50.63	40.25	Bell Atlantic Corp	47.38	0.75	1.61
NYS	53.00	43.38	Bellsouth Corp (H)	52.63	-0.13	-0.24
NYS	7.38	4.13	Bolt Beranek & Newman (L)	4.63	0.38	8.82
NYS	65.88	38.63	Cabletron Systems	51.50	2.75	5.64
OTC	31.00	14.50	Chipcom Corp	21.75	-0.75	-3.33
OTC	46.25	17.63	Cisco Systems Inc	49.25	2.50	5.35
OTC	35.25	11.25	Compression Labs Inc (L)	11.25	-2.38	-17.43
OTC	3.38	0.88	Data Switch Corp	1.56	0.06	4.20
NYS	21.63	12.38	Digital Comm Assoc *	19.13	0.63	3.38
OTC	17.50	6.50	Digital Systems Int'l Inc	6.75	0.25	2.94
OTC	7.00	3.63	DSC Communications	5.38	0.63	13.16
OTC	10.88	4.75	Fibronix Int'l Inc	5.50	-0.75	-12.00
OTC	37.50	10.50	Fibmet Corp	16.25	1.63	11.11
OTC	3.38	1.13	Gandalf Technologies Inc	2.63	0.25	10.53
OTC	2.44	0.69	Gateway Communications	0.94	0.19	25.07
NYS	5.50	2.13	General Datacomm Inds	3.75	0.13	3.45
ASE	5.88	0.50	Go Video	3.00	0.00	0.00
NYS	35.00	28.13	GTE Corp *	33.00	0.13	0.38
NYS	70.63	50.00	ITT Corp	64.75	-1.38	-2.08
OTC	36.13	25.25	MCI Communications Corp	33.00	1.88	6.02
OTC	14.50	2.25	Microcom Inc (L)	4.00	0.13	3.23
NYS	16.25	9.25	Network Equipment Tech *	11.38	1.63	16.67
OTC	25.50	6.75	Network General	6.50	-0.13	1.30
OTC	29.00	6.50	Network Systems Corp	6.88	-0.25	2.47
OTC	17.88	6.50	Newbridge Networks Corp	16.00	-0.38	2.29
NYS	49.25	34.13	Northern Telecom Ltd *	38.88	0.75	1.97
OTC	65.00	25.63	Novell Inc *	54.00	0.25	0.47
NYS	82.38	59.13	Nynex Corp *	61.00	0.00	0.00
OTC	37.50	16.50	Octel Communications Corp	22.25	-0.50	2.20
OTC	9.88	4.50	Penril Data Comm Ntwks	4.75	0.25	5.56
OTC	63.00	17.88	Picturetel Corp (L)	17.88	-5.13	-22.25
OTC	18.75	6.75	Proteon Inc (L)	12.50	1.50	13.64
NYS	25.50	11.63	Scientific Atlanta Inc (H)	24.88	0.00	0.00
NYS	60.00	51.50	Southwestern Bell Corp	56.00	2.50	3.94
NYS	27.63	20.75	Sprint Corp	22.25	0.50	2.30
OTC	13.75	4.00	Standard Microsystems Corp	12.13	0.73	6.59
OTC	33.50	14.25	Synoptics Communications (H)	31.88	0.25	0.79
NYS	39.50	32.88	US West Inc (H)	38.38	-0.50	-1.29
OTC	41.25	21.25	Wellfleet Communications	37.38	2.88	8.75
PC and Workstations						Off 0.27%
OTC	15.25	4.75	Advanced Logic Research	5.00	-0.25	-5.26
OTC	70.00	42.75	Apple Computer Inc *	45.00	-0.75	-1.64
OTC	32.25	12.00	AST Research Inc *	13.25	-0.75	-5.36
NYS	16.25	6.13	Commodore Int'l (L)	6.50	0.13	1.33
NYS	37.50	22.13	Compaq Computer Corp *	25.00	-1.13	-4.31
OTC	25.00	13.61	Dell Computer Corp	16.00	0.50	2.88
OTC	7.75	3.00	Everex Systems Inc	3.13	-0.25	-7.41
NYS	34.00	21.25	Harris Corp	27.88	0.63	2.29
NYS	85.00	44.63	Hewlett-Packard Co *	69.00	1.75	2.50
NYS	25.75	14.13	Silicon Graphics	19.00	0.63	3.40
OTC	35.88	20.75	Sun Microsystems Inc *	27.50	0.63	2.33
NYS	31.25	22.88	Tandy Corp *	23.00	-0.63	-2.65
NYS	11.13	5.13	Zenith Electronics	7.63	0.13	1.67
OTC	29.50	5.25	Zeos International Ltd	5.75	-0.25	-4.17
Large Systems						Off 0.09%
ASE	20.63	11.63	Amdahl Corp *	17.88	0.88	5.15
NYS	14.00	7.50	Control Data Corp	13.75	0.00	0.00
NYS	16.38	6.00	Convex Computer (L)	6.25	-0.13	1.96
OTC	19.63	2.75	Cray Computer	2.75	-0.38	-12.00
NYS	52.25	27.38	Cray Research Inc *	29.00	0.25	0.87
NYS	22.50	7.13	Data General Corp	6.50	0.88	11.48
NYS	71.63	33.25	Digital Equipment Corp *	43.38	5.88	15.67
NYS	109.38	61.63	IBM*	94.88	-2.88	-2.94
NYS	125.00	49.50	Matsushita Electronics	103.88	-0.75	-0.72
OTC	16.75	9.50	Pyramid Technology	10.75	0.25	2.38
OTC	17.88	7.50	Sequent Computer Sys	14.38	-0.50	-3.38
OTC	16.38	5.50	Sequoia Systems Inc	5.75	-0.38	-6.12
NYS	64.25	32.38	Stratus Computer Inc *	41.00	-1.63	-3.81
NYS	15.13	6.50	Tandem Computers Inc *	10.25	-1.25	-10.87
NYS	11.75	3.38	Unisys Corp *	6.63	0.75	9.45
ASE	7.50	2.00	Wang Labs Inc (b)*	3.25	-0.13	-3.70
Software						Up 2.65%
OTC	68.50	37.50	Adobe Systems Inc	43.25	-0.75	-1.70
OTC	13.25	2.50	Al Corp (L)	3.00	0.00	0.00
OTC	45.00	11.50	Aldus Corp	14.00	0.75	5.66
OTC	18.75	10.13	American Software Inc	13.13	0.38	2.94
OTC	20.00	7.50	Ask Computer Systems	12.38	2.00	16.26
OTC	57.25	23.25	Autodesk Inc	38.00	-0.50	-1.30
OTC	37.75	8.25	Bachman Info Systems	11.38	0.13	1.11
OTC	42.50	29.00	BGS Systems Inc	36.00	0.50	1.41
OTC	79.00	37.25	BMC Software Inc	46.75	4.00	8.36
OTC	20.50	6.00	Boole & Babbage	17.50	0.25	1.45
OTC	86.75	38.50	Borland Int'l Inc * (L)	37.00	-1.88	-4.82
OTC	11.25	3.63	CE Software (L)	4.13	0.13	3.13
ASE	14.38	6.50	Cheyenne Software Inc	11.25	0.63	5.88
OTC	20.38	7.25	Cognos Inc	8.38	0.13	1.52
Computer Applications						
NYS	17.00	7.50	Computer Associates*	12.50	-0.50	-4.00
OTC	21.50	8.50	Comshare Inc	6.50	-1.50	-15.00
OTC	47.88	6.50	Easel Corp	7.75	-0.25	-3.13
OTC	16.50	6.25	Geac Systems Int'l	16.25	0.88	5.04
OTC	25.50	11.50	Group I Software	16.00	-2.00	10.00
OTC	6.63	3.50	Hogan Systems Inc	4.38	0.38	8.38
OTC	38.25	16.50	Information Resources	24.00	-0.38	-1.64
OTC	38.00	5.50	Informix Corp	30.50	2.25	7.88
OTC	22.75	12.50	Intergraph Corp	14.25	0.50	3.64
OTC	15.00	4.88	Interleaf Inc	9.75	1.00	11.43
OTC	20.25	6.50	Intersolv Inc	11.88	-0.88	-6.88
OTC	30.00	10.50	Knowledgeware Inc	12.75	-0.25	-1.92
OTC	49.25	30.25	Legent Corp *	35.38	2.00	5.99
OTC	40.75	15.50	Lotus Development* (L)	17.88	0.63	3.62
OTC	7.38	2.06	Meca Software (L)	2.25	0.13	5.88
OTC	22.25	6.50	Mentor Graphics	6.88	-0.38	-4.05
OTC	20.50	6.50	Micrografx Inc	6.75	-2.25	-2.50
OTC	88.64	43.34	Microsoft Corp *	70.25	0.75	1.08
OTC	21.13	6.63	Oracle Corp *	16.75	0.88	4.50
OTC	41.25	13.00	Parametric Technology	34.50	2.50	7.81
OTC	11.00	3.50	Phoenix Technologies (L)	4.00	0.13	3.23
OTC	25.25	10.63	Platinum Technology	17.25	5.75	27.78
OTC	46.50	27.50	Progress Software Corp	38.25	0.50	1.40
OTC	25.63	4.00	Quarterdeck Office Sys.	4.75	-0.25	-5.00
OTC	20.50	6.50	Rainbow Technologies Inc	17.00	2.50	17.24
OTC	29.50	6.75	Rasterops	11.25	0.38	3.45
OTC	17.25	5.38	Ross Systems	7.50	-0.63	-7.69
OTC	26.25	8.13	Software Publishing Corp (L)	8.25	-0.75	-8.33
OTC	6.50	2.00	Software Toolworks Inc	3.38	1.13	50.00
OTC	7.25	1.75	Spectrum Software	3.00	-0.13	-4.00
OTC	18.50	6.25	State of the Art	7.13	-0.75	-9.52
NYS	25.25	11.63	Sterling Software Inc	16.88	0.38	2.27
OTC	30.00	13.00	Struct Dynamics Research	16.00	0.50	3.23
OTC	31.75	15.00	Sybase Inc	26.50	2.50	10.42
OTC	51.00	25.50	Symantec Corp	33.88	3.75	12.81
NYS	15.50	5.75	Systems Center Inc * (L)	5.75	-0.63	-9.50
OTC	34.25	6.66	System Software Assoc	25.75	-0.75	-2.73
OTC	23.75	14.50	Walker Interactive Systems (L)	16.00	-1.00	-5.88
OTC	6.63	2.13	Windstar	2.63	0.50	0.00
Semiconductors						Off 3.91%
NYS	21.50	7.38	Advanced Micro Devices	6.63	0.38	6.58
NYS	11.13	7.00	Analog Devices Inc	6.88	0.25	2.50
OTC	14.88	6.75	Atmel Corp	6.38	0.00	0.00
OTC	14.13	5.25	Chips and Technologies (L)	5.25	-0.75	-12.50
NYS	22.63	7.38	Cypress Semiconductor Corp (L)	6.00	0.13	1.59
NYS	10.13	6.25	Dallas Semiconductor (H)	8.38	-0.63	-8.25
OTC	68.75	38.50	Intel Corp *	88.00	-0.50	-0.88
NYS	6.88	5.75	LSI Logic Corp	5.75	-0.75	-11.54
NYS	22.38	11.13	Micron Technology	14.00	0.13	0.90
NYS	83.75	54.00	Motorola Inc *	83.00	5.00	6.41
NYS	11.50	3.88	National Semiconductor*	6.25	0.13	1.37
OTC	27.00	11.50	Sierra Semiconductor	11.50	-4.00	-25.61
NYS	40.50	25.00	Texas Instruments*	39.63	1.88	4.97
OTC	10.50	5.88	VLSI Technology	6.63	-0.25	-3.62
OTC	6.75	2.50	Wavtek (L)	2.63	-0.63	18.23
ASE	5.63	2.00	Western Digital Corp	4.63	-0.13	-2.63
OTC	32.50	17.25	Xilinx	21.13	0.75	3.68
OTC	11.50	4.83	Zilog Inc	6.38	-0.63	-8.93
Peripherals and Subsystems						Off 0.87%
OTC	10.00	2.75	Archive Corp	7.38	0.63	9.28
OTC	24.50	11.25	Banctec Inc	21.38	-2.88	11.88
OTC	25.50	7.00	Cambex Corp	14.00	0.00	0.00
ASE	17.63	7.00	Cognitronics Corp	17.63	1.50	9.30
NYS	23.88	12.50	Conner Peripherals*	19.13	-1.25	-6.13
ASE	19.66	3.38	Dataram Corp	12.63	-0.13	-0.98
NYS	18.75	4.88	EMC Corp (H)	17.13	-1.13	-6.16
OTC	6.38	4.75	Emulex Corp	6.88	0.00	0.00
OTC	23.00	14.50	Evans & Sutherland	14.88	-1.13	-7.03
OTC	40.63	16.00	Exabyte	27.75	-1.63	-5.53
OTC	27.25	15.75	Intelligent Info Systems	26.00	1.75	7.22
OTC	11.25	4.50	Iomega Corp	5.75	0.25	4.55
OTC	34.75	14.50	IPL Systems Inc	19.38	0.38	1.97
OTC	24.50	10.75	Komag Inc (L)	12.63	0.38	3.06
OTC	14.00	2.25	Maxtor Corp *	11.00	0.25	2.33
OTC	10.50	5.75	Micropolis Corp	6.25	-0.25	-3.83
NYS	98.88	83.50	3M Co	88.88	2.00	2.09
OTC	7.75	3.50	Printronix Inc	5.00	-0.75	-13.04
NYS	25.75	7.00	QMS Inc (L)	7.50	0.13	1.69
OTC	16.00	6.88	Quantum Corp	14.13	-0.38	-2.56
OTC	12.63	5.13	Radius Inc (H)	10.63	-1.13	-9.57
NYS	12.88	5.88	Recognition Equipment	8.13	0.13	1.88
OTC	13.13	5.38	Relcon Inc	8.63	0.00	0.00
OTC	17.63	7.25	Seagate Technology*	14.50	-0.13	-0.86
NYS	75.00	25.13	Storage Technology*	30.88	-0.13	-0.40
NYS	30.88	16.00	Tektronix Inc	18.13	0.00	0.00
NYS	92.25	52.63	Xerox Corp	71.38	0.13	0.18
Services						Off 0.48%
OTC	18.00	11.88	American Mgmt. Systems*	16.75	0.63	4.13
NYS	5.38	2.88	Anacomp Inc	3.13	-0.38	-10.71
OTC	18.00	12.25	Analysts Int'l	17.00	-0.13	-0.73
OTC	49.00	30.25	Auto Data Processing*	42.00	0.75	1.82
NYS	24.16	12.50	Comdisco Inc *	16.00	-1.13	-6.57
OTC	13.50	7.75	Computer Horizons	8.75	0.50	6.06
NYS	64.88	52.25	Computer Sciences*	63.88	-2.63	-4.20
NYS	10.13	7.00	Computer Task Group	8.00	0.75	10.34
OTC	40.50	15.00	CompUSA Inc	38.25	0.00	0.00
OTC	16.25	6.50	Corporate Software	6.50	-1.50	-15.00
OTC	30.75	12.75	Egghead Discount Software	17.00	-0.25	-1.45
NYS	33.06	23.18	General Motors E (EDS)*	27.13	-0.25	-0.91
OTC	30.38	6.25	Intelligent Electronics	7.75	-0.25	-3.13
OTC	14.88	2.75	Mensel	8.63	-0.13	-1.28
OTC	15.75	6.50	Microage Inc	8.50	-0.50	-5.00
OTC	27.50	13.94	Psychnet	23.75	-0.25	-1.04
NYS	73.00	47.25	Policy Management Sys	69.25	2.13	3.17
NYS	43.50	16.63	Reynolds and Reynolds	40.75	2.75	7.24
OTC	32.00	21.25	SEI Corp	23.25	0.00	0.00
OTC	24.38	16.88	Shared Medical Systems	18.25	-1.13	-5.81
OTC	25.25	13.50	Sungard Data Systems	25.00	1.25	5.26
NYS	4.88	1.13	Ultimate Corp	1.88	0.13	7.14

KEY (H) = New annual high reached in period (L) = New annual low reached in week

* Companies tracked in Computerworld Stock Index

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Second-class postage paid at Framingham, Mass., and additional mailing offices. *Computerworld* (ISSN 0010-4841) is published weekly, with a single combined issue for the last week in December and the first week in January by CW Publishing/Inc., 375 Cochituate Road, Box 9171, Framingham, Mass. 01701-9171. Copyright 1992 by CW Publishing/Inc. All rights reserved. *Computerworld* can be purchased on microfilm and microfiche through University Microfilms Inc., 300 N. Zeeb Road, Ann Arbor, Mich. 48106. *Computerworld* is indexed. Back issues, if available, may be purchased through Margaret McIndoe. Photocopy rights: permission to photocopy for internal or personal use of the internal or personal use of specific clients is granted by CW Publishing/Inc. for libraries and other users registered with the Copyright Clearance Center (CCC), provided that the base fee of $3.00 per copy of the article, plus $.50 per page is paid directly to Copyright Clearance Center, 27 Congress Street, Salem, MA 01970, 508-744-3350. Reprints (minimum 500 copies) and permission to reprint may be purchased from Sharon Bryant, CW Publishing/Inc., 375 Cochituate Road, Box 9171, Framingham, Mass. 01701-9171. Requests for missing issues will be honored only if received within 60 days of issue date. Subscription rates: $2.00 a copy; U.S. — $48 a year; Canada — $110 a year; Central & So. America — $130 (surface), $250.00 (airmail) a year; Europe — $195 a year; all other countries — $295 a year. Four weeks notice is required for change of address. Allow six weeks for new subscription service to begin. Subscriptions call toll free (800) 669-1002.
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ABP

IN BRIEF

Unisys Q2 earnings up

■ Continuing its rebound, **Unisys Corp.** last week reported second-quarter earnings of $105.4 million compared with a $1.3 billion loss in the comparable period last year. Revenue for the quarter, however, declined slightly to $2.09 billion from $2.20 billion. The company attributed its showing to progress made in cutting annual expenses by $800 million.

■ **AT&T** posted second-quarter net profits of $961 million, up 3% from the year-earlier period. Revenue was $9.85 billion, up 2% from the same quarter last year. AT&T Computer subsidiary **NCR Corp.**, which includes recently acquired Teradata Corp., recorded earnings of $98 million on revenue of $1.75 billion.

■ Stung by increased competition from 80386 chip clones, **Intel Corp.** posted second-quarter earnings of $213 million, down 7% from the record level totaled in the comparable period last year. Revenue for the quarter was $1.25 billion, up 5% from the same period last year, the company said.

■ Second-quarter earnings at **Motorola, Inc.** in Schaumburg, Ill., rose 17% to $146 million on revenue of 3.14 billion, an increase of 12% from the like period last year.

■ Ottawa-based systems integrator **SHL Systemhouse, Inc.** reported a third-quarter net loss of $145,000, compared with a $4 million profit in the year-earlier period. Revenue for the period was $548.2 million, up 2% from the third quarter last year.

■ Workstation vendor **Intergraph Corp.** said second-quarter net earnings dropped 86% to $2.9 million on revenue of $289 million — which was also off 4% from the year-earlier period.

Triple threat to hit DRAM market

Expense of building denser memories drives IBM, Siemens AG and Toshiba into partnership

BY MICHAEL FITZGERALD
CW STAFF

NEW YORK — IBM, Siemens AG and Toshiba Corp. joined forces last week to build 256M-bit dynamic random-access memories. All three companies said the move was prompted by the expense of developing and building DRAMs. Many analysts interpreted the step as a natural progression toward a truly international economy.

A DRAM is a semiconductor that stores information in a wide variety of devices, ranging from computers to appliances. A 256M-bit DRAM could hold 25,000 pages of typed, double-spaced text. The largest DRAM on the market today holds 16M-bits of data.

Earlier this year, IBM and Siemens cooperated to build the first such semiconductor to hit the market, but other companies such as Hitachi Ltd. and Texas Instruments, Inc. also make them.

Michael Attardo, IBM's general manager of technology products, said all three companies would contribute money for capital investment and development to boost IBM's Advanced Semiconductor Technology Center in East Fishkill, N.Y., to production of quarter-micron-level chips, which is expected to cost as much as $1 billion.

The project would leverage IBM's research and development strength, Siemens' semiconductor process engineering skills and Toshiba's abilities in manufacturing design.

Grand slam

Attardo said he fully expected the threesome to reach the market first with 256M-bit products near the end of the decade. This, he said, was crucial to making profits from chip sales: "If you're six months behind, you could lose billions of dollars."

NEC Corp. has stated it is developing 256M-bit technology, and Attardo said he expects TI — with or without sometime partner Hitachi — to stay in the market.

Attardo also said he expects Intel Corp., inventor of the DRAM, to re-enter the market, although an Intel spokeswoman said this was unlikely. Korean manufacturer Samsung is another likely player.

Strange bedfellows

Advanced Micro Devices, Inc.'s (AMD) W. J. Sanders III, chairman and chief executive officer, appears to have a short memory. The longtime Japan-basher last week led his company into an agreement with Fujitsu Ltd. to make solid-state memories.

Under the deal, AMD and Fujitsu will contribute $350 million each to build a half-micron wafer fabrication facility in Japan. This plant, scheduled to open in 1994, will make erasable programmable read-only memories (EPROM) and flash memories. Sunnyvale, Calif.-based AMD is the world's leading producer of EPROMs and is second to Intel in flash memory production.

The AMD/Fujitsu accord comes in the wake of similar flash memory agreements between Intel and Sharp Corp. and between IBM and Toshiba. Fujitsu assembles Intel's flash memory devices, but an Intel spokeswoman said this arrangement is unlikely to be affected by the new agreement.

MICHAEL FITZGERALD

Systems Center plans layoffs to combat losses

BY ELISABETH HORWITT
CW STAFF

RESTON, Va. — Systems Center, Inc. is now paying for two years of aggressive expansion with a projected second-quarter loss and pending layoffs.

While Systems Center does not yet have firm second-quarter financial figures, numbers will definitely be on the red side of the ledger despite an overall revenue gain, said Richard Moore, vice president of corporate communications. The company earned $326,000 in the comparable period last year on revenue of $29.1 million. "We're not experiencing the growth rates we expected worldwide," he said.

As a result, the company will enact a program to reduce its 1,000-member staff by an undisclosed amount. It initially will seek work-force reductions through a voluntary resignation program featuring an enhanced severance package offered to employees in the U.S. and Australia. Layoffs will follow in an amount to be determined by second-quarter results and by how many employees opt for the voluntary resignation program.

The expected disappointment in the second quarter is partly the result of worldwide economic troubles, Moore said. Also, "there may still be some redundancy and overhead associated with our acquisitions over the last couple of years," he said.

Indeed, "it has been a real strain for Systems Center" to get up to speed with a bevy of acquired product lines that appeal to very different customer bases and have disparate sales and support needs, according to Mary Johnston, a principal at Northeast Consulting Resources, Inc., a Boston-based consulting firm.

Best known for its Network Datamover host bulk file transfer product, Systems Center bit off a large chunk in 1990 when it acquired Australia-based Software Developments International, purveyor of Net Master network management software.

During that same year, Systems Center also acquired a small Texas firm that sold software for managing distributed IBM Application System/400s and another firm that sold administration and backup software for Unix networks.

Despite its current woes, however, Systems Center is making the right step by moving beyond the shrinking mainframe-oriented market to the growing distributed computing arena, Johnston said.

Court ditches bankruptcy shield for pirate

BY JAMES DALY
CW STAFF

PROVO, Utah — A federal judge recently slammed shut an escape hatch often used by software pirates when she declared that one pirate could not avoid paying financial damages by declaring bankruptcy.

U.S. Bankruptcy Judge Lynne Riddle made the ruling as part of a suit brought by Novell, Inc. against computer reseller MedPerfect Systems, Inc. and owner Ronald G. Frank. The defendants reportedly sold office automation and record-keeping systems, including pirated copies of Novell's NetWare, to dentists in Southern California.

In March 1991, Frank and the now-defunct MedPerfect were issued a preliminary injunction ordering them to stop the alleged unauthorized duplication. They filed bankruptcy soon thereafter in a bid to avoid paying damages, a move long used by software pirates.

"In the past, it has become almost routine for software pirates to escape liability by declaring bankruptcy after being sued," said David Bradford, senior vice president at Novell.

Novell was not ready to give up the chase, however, and discovered that the Federal Bankruptcy Code does not allow debtors to skip out on obligations incurred by "willful and malicious" actions. Until now, those legal points had been slippery to make in software piracy cases.

"The hurdle has always been trying to prove that the software copying was malicious," said Cara Burns, a counsel for Novell and lawyer at the Los Angeles law firm of Arter, Hadden, Lawler, Felix & Hall.

Because the defendants admitted making unauthorized copies of Novell software, they fulfilled the "willful" condition. The "malice" requirement was met because the defendants knew they were injuring Novell by selling pirated software, Burns added.

Novell has not said how much it seeks in restitution.

wysiwyg

The algorithm method

South Shore Machine Tools in Lynbrook, N.Y., has just released Sex Machine, a utility that converts ASCII records containing uppercase name and address information to mixed case output. Sex Machine identifies the gender (sex) of each name in the file using an algorithm.

Quips & quotes

"Technology is the key to the America's Cup race. You can't win with a slow boat, and the only way to get a fast boat is to use the best technology available [with] the best computers and software."
Bill Koch, America³ skipper

Did you know?

Apple once asked owners of the Apple III computer to drop the machine from the height of 1 ft onto a flat surface. Why? To ensure that the integrated circuits inside the computer were securely in their sockets.

What's your idea of a vacation?

Bonaire
Dudley Cocke,
president of Executive Insight Group
and retired Sun Oil IS exec

Scuba diving and sailing at
Kona Kai resort in Key Largo, Fla.
Joe Hirsh,
[illegible]

HARDEE HAR HAR

A software salesman died. Because the salesman's life had both positive and negative aspects to it, St. Peter decided to leave the decision of what to do with his soul up to the dead man. St. Peter leads the guy to two doors. Behind Door No. 1, it's party time — rock and roll, funny hats, everyone having a ball. Behind Door No. 2, things are pretty quiet — serene, pastoral setting, white robes, hymnal reading. The software salesman says to St. Peter, "Gee, I'm a rock 'n roll kind of guy, I'll opt for Door No. 1." So he goes in, St. Peter backs out, door shuts, bolts, devil appears. The software salesman says, "What happened to rock 'n roll?" Devil says, "You liked our demo, eh?"

Do you know any good (clean) computer-related jokes? Then call Jodie Naze or Lory Dix at (800) 343-6474.

Special thanks to the Computer Museum, Boston

OLD COMPUTERS NEVER DIE

UnUsUaL SyStEMS
"WHAT MAKES US UNUSUAL? WE CARE. WE REALLY CARE"

An organization called Unusual Systems is seeking to preserve an icon of the computer era — control panels and consoles from mainframes and minicomputers built during the 1950s, '60s and '70s. Its current mission is to collect as many panels and consoles as possible and then exhibit them. There are 35 pieces in the current collection. Among the items Kevin Stumpf, proprietor, is interested in are Burroughs B5000s, CDC Omegas, DEC PDP-8s, GE 635s, Honeywell 115s, IBM 1401s and Texas Instruments minis. *For more information call Kevin Stumpf at (519) 741-9047.*

INSIDE LINES

What else would he say?

▶ Though relations are warming (see story page 4), Microsoft Chairman Bill Gates doesn't appear ready to cozy up to Apple and support the Pink operating system under development at Taligent, the IBM/Apple joint venture. "We're not clear as to what [the new operating system] will contain," so Microsoft has no plans to support it, he said. Gates was equally noncommittal on the Apple/IBM joint venture Kaleida, which will create multimedia products. "We don't really understand what it is they are doing," he said. "When [CEO] Nat [Goldhaber] gets his plan together, we've invited him to come on up and explain it to us."

Necessary evils

▶ Despite their renewed cooperation, Microsoft is still battling Apple in the courtroom. But Apple sure has a strong financial attraction to keep Microsoft as a partner. Microsoft pulled in $265 million in fiscal 1992 in Macintosh-related applications business, according to Gates. If Macintosh applications were a separate software company, it would be one of the 10 largest in the world, he claimed.

Blood transfusion needed — and fast

▶ While DEC struggles to reorganize, some users contend that the Maynard, Mass., company should examine its sales staff more closely. "They don't know our products. They don't know our needs. All they know is that the end of the month is coming, and they gotta make their quotas," said one longtime user who is fast becoming fed up with DEC's field staff.

Objects galore

▶ This week's ObjectWorld show will be the forum for the unveiling of a product that few analysts have had their eyes on. According to one source, Intellicorp, an erstwhile KnowledgeWare partner, is set to unveil ProKappa-PC 2.0, an object-oriented application development framework designed to bring the desktop into mainframe software development. Intellicorp has spent the past few months working with James Martin — who owns more than 10% of KnowledgeWare — to pave object-oriented paths into IBM mainframe development. Expect a fall delivery of the products, an Intellicorp insider says.

Trading places

▶ Gary McFelia, senior vice president at Chase Manhattan who is responsible for the bank's worldwide desktop support, is moving on to a new charter. In his new role, McFelia will be responsible for Chase's New York trading operations. According to sources close to the company, McFelia will oversee a $75 million project to develop a new trading platform for Chase. The project will enable Chase to link 500 of its New York traders using fiber-optic connections and Sun workstations at 1 Chase Plaza in New York.

Shooting low

▶ Toshiba is preparing its first entry into the low-cost notebook market, sources said. Toshiba general manager Michael Winkler promised earlier this year that the company would deliver a sub-$1,500 notebook by the end of summer. Sources close to the company said it was on schedule to release a $1,495 386SX-based notebook with 1M byte of RAM in September. The sources said Toshiba will also release two high-end totables — AC-powered machines equipped with both Intel 50-MHz DX and 25/50- and 33/66-MHz DX2 chips.

Ex-McCormack & Dodge personnel — some of whom were ousted from their jobs after M&D merged with Management Science America in 1990 to form D&B Software — planned a reunion last week. It wasn't a plot to recapture lost jobs but a breezy nighttime cruise around Boston Harbor. More than 100 former M&D colleagues agreed to attend the event, which was designed to "bring some fun, special people back together," said a marketing rep who helped organize the jaunt. The melding of M&D and MSA "was no merger — it was a wholly unpleasant takeover process that started at the top and worked down through the ranks," according to another ex-M&Der. Phone, fax or CompuServe News Editor Alan Alper with news (or cruise) tips at (800) 343-6474, (508) 875-8931 or 76537,2413, respectively. Or try Computerworld's 24-hour voice-mail tip line at (508) 820-8555.

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